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MARGINALIA

SAH Book Award

The fifth annual award of the Society of Architectural Historians for a publication on an aspect of the history of architecture, and open to English authors of works on American subjects, or published in America, has been given to Dr. Thomas Howarth, for his study of *Charles Rennie Mackintosh and the Modern Movement*. This is the first time

the award has gone outside the USA, and another British publication, John Summerson's *Architecture in Britain*, 1530–1830, received an honourable mention. This year is also the first occasion on which the award has been dignified with the title of 'the Alice Davis Hitchcock Book Award,' and Dr. Howarth will receive a commemorative medallion presented by Professor Henry-Russell Hitchcock in memory of his mother.

York Architectural Studies

The first issue of the *Bulletin* of the York Institute of Architectural Study has now appeared, in pursuit of a policy of maintaining contact between the various bodies and persons interested in the Institute's work. There are notes on the bodies, such as SPAB and the Central Council for the Care of Churches, which are most closely connected with the studies carried on at York and a suggestion that architectural assistants interested in protection and repair work, and architects who need such assistants, should contact Dr. Eeles, of Dunster, Somerset, who will act as a clearing-house for such information. This issue of the *Bulletin* also contains a useful paper on the history and use of lightning conductors on church spires, and a programme of the Institute's activities for 1954. All enquiries in connection with the *Bulletin*, and the Institute, should be sent to the Secretary, St. Anthony's Hall, York.

UIA Journal

We welcome the appearance of the first issue of the official organ of the International Union of Architects, dated March, 1954, since it will help to bring to public attention the only international organization based on the idea of architecture as a profession, rather than on some particular aesthetic or technical aspect of the art, and because it is one of the few organizations which still spans the iron curtain without apparent strain or neurosis. The first issue deals mostly with the Third Congress of UIA at Lisbon, in September of last year, reporting the Resolutions, which provide a very valuable summing-up of the way world architects regard themselves and their calling, and the business sessions, dealing with such matters as election of officers, etc. The new President of UIA is Jean Tchumi of Lausanne, replacing Sir Patrick Abercrombie, who was unanimously elected Honorary President in recognition of his work for UIA during the last five years.

Architects in this Issue

Architect of House in Maine (see pages 370 to 374), SERGE CHERMAYEFF, born in 1900 and educated at Harrow, was a journalist and painter before studying architecture.

Before going to America he practised as an architect in England for a short period in partnership with the late Eric Mendelsohn with whom he won the competition for Bexhill Pavilion completed in 1936. Other English works include buildings in London for Gilbeys and in Manchester for ICI, his own house in Halland, Sussex, and various studios for the BBC. He went to America in 1940 to succeed Moholy Nagy as President of the Institute of Design, which the latter had founded in Chicago in order to put Bauhaus methods of teaching into practice in America. He resigned in 1951 when the Institute was merged with the Illinois Institute of Technology. He has since been a

FESTIVAL HALL ORGAN. A series of concerts at the Royal Festival Hall in March and April inaugurated the organ, above, which now occupies the whole of the rear wall of the auditorium and completes the scheme of interior decoration. The screen which had previously closed off the organ chamber has been made to fold back, exposing to view the whole depth of the chamber. It is a bold innovation on the part of the LCC architects, since organs are usually concealed either behind a grille or behind an arrangement of dummy pipes. In the Festival Hall only the graduated rows of pipes in the centre front are dummies. They are designed to give coherence to the informal groups of real pipes which can be seen receding in depth behind, and are arranged according to musical requirements. Their sculptural effect is emphasized by the lighting, which throws the whole interior of the organ chamber into relief.

visiting critic at MIT and is now a professor at Harvard. During his years in America administrative work has precluded much private practice, but he has now opened an office at Cambridge, Mass., where he will practise in partnership with Heyward Cutting. He is married to an English wife and has two boys.

Architect of House in California (see pages 375 to 377), C. C. STRAUB was born at Macon, Georgia, 1920. Educated at Texas A. & M. College, and University of Southern California. Graduated 1943. Three years' service in the Navy on Landing Ships as Lieutenant (J.G.) mostly spent in the Mediterranean area. Returned to California after the war and began teaching as assistant in the newly reorganized School of Architecture, now Assistant Professor. Private practice has consisted mostly of residential work and a school of music and the arts in the mountains near Los Angeles.

Married and has two young daughters. Chief interest is travelling. Hopes to visit Europe this summer. Also enjoys building furniture, silver work, and other crafts.

CORRESPONDENCE

The New Brutalism

To the Editors,
THE ARCHITECTURAL REVIEW

SIRS,—While I appreciate your efforts to entertain architects, many of whom find their work hard, irritating and unrewarding, I cannot agree that the best way of doing this is by adding a funny column to the miscellany section of the REVIEW.

It may be essential in these days to try to popularize even a journal with the standing of the REVIEW, but I do hope this tendency will go no further.

I dread the appearance of a special section for women architects or a page for architect's children.

I am, etc.,

Lytham St. Annes. T. MELLOR.

To the Editors,
THE ARCHITECTURAL REVIEW

SIRS,—Now that the New Brutalism has found a home in your pages, perhaps your readers would be interested to hear of the reaction of AA students.

As one of the initiators of the AA Forum on 'Parallels of Life and Art' at which both Peter Smithson and Basil Taylor were speakers, I was particularly interested to see that student feeling was running very strongly against the exhibition —the aesthetic source of the New Brutalism. It was variously condemned as shallow, eclectic, an example of the New Picturesque and denying the spiritual in man.

As a result of this discussion one of your editorial colleagues at a recent seminar at the Institute of Contemporary Art labelled the AA students as a reactionary body!

If a 'reactionary' is one who reacts deliberately against extremes and seeks for true synthesis of environment and life, in its fullest sense, then I will willingly accept the label, as, I believe, would most of my fellow-students.

Personally, much as I admire the New Brutalists as masters of the craft of building and for their sincere attempt to find a new 'Relationship between living things and environment,' I cannot hope, with your correspondent, Kenneth Scott, that aesthetically, the Soho project is 'a glimpse into the future of English architecture.'

I am, etc.,

London. HUGH POPE.

Twentieth-Century Picturesque

To the Editors,
THE ARCHITECTURAL REVIEW

SIRS,—As my broadcasts on the Picturesque have not been published and are not, therefore, available for general scrutiny, I would like to correct an impression which may have been gained by some of your readers from paragraph nine in Professor Pevsner's article in the April issue of the REVIEW. The implication in this paragraph is that in my talks I was critical of the Royal College of Art and the work being done there. My broadcasts did not, in fact, contain any reference to the College nor any criticism of its students' work. I think it only proper to mention that the piece of graphic design by a former student of the College chosen to illustrate and amplify that same paragraph was made as a joke, a parody, and commissioned as such.

Yours, etc.,

London. BASIL TAYLOR.

Dr. Pevsner writes: If the paragraph in question has given readers the impression that I was quoting Mr. Taylor, that impression is certainly wrong. All I intended to do was to explain to myself how Mr. Taylor may have been led to views such as he professed. That the Christmas Card was commissioned as a joke does not surprise me. But does Mr. Taylor mean to say that it was drawn by someone as much out of sympathy with Victorian irresponsibilities as he is, and that it was put into the Journal of the Society of Industrial Arts as an anti-Victorian demonstration?

American Villas

To the Editors,
THE ARCHITECTURAL REVIEW

SIRS,—An error crept into your introduction to my article on *American Villas.** The Newport Casino is not 'long demolished'. It is not demolished at all, but is in excellent shape and still functioning. I cannot believe that you received the impression that the Casino no longer existed from my article. Nor can I agree that the American suburb is quite so 'wrecked' as your opening caption insists. Please note my introductory and concluding paragraphs.

Your caption under the H. A. C. Taylor House is harder on it than I would have been, although probably not harder than I might have been three years ago when the article was first written. The Taylor House, also, as the article indicates, played a positive as well as a negative part in American invention, and, as you know, Wright did a fairly close adaptation of it in his Blossom House of 1893. Unfortunately, the Taylor House, unlike the Newport Casino, has actually been 'demolished' since the article was written. Its passing is surely to be regretted, since it was without doubt one of the critically important monuments in the development of American architecture.

I am, etc.,

VINCENT J. SCULLY.

New Haven, Connecticut.

* AR, March, 1954.

Fertighaus: An Austrian Experiment in Costing

To the Editors,
THE ARCHITECTURAL REVIEW

SIRS,—With reference to the article on the Vienna pilot settlement.*

Whilst the tendering and costing system is, indeed, a new departure for Austria, this is not so for the United States where W. K. Wittausch (now attached to the US Special Mission for Economic Co-operation, Austria) developed and used it on various projects.

It was, of course, the inherent beauty of this system that inspired the typographical treatment.

I have now received from Vienna a number of copies of the book which could be borrowed should any reader be interested in a closer scrutiny of it.

I am, etc.,

London. ERNEST HOCH.

* AR, March, 1954.

ACKNOWLEDGMENTS

COVER: From *Figures in a Landscape*, British Film Institute. MARGINALIA, pages 363-364: Festival Hall Organ, John R. Pantlin. FRONTISPIECE: Drawing by Kenneth Browne. TWO HOUSES, pages 370-377: *House in Maine:* Ezra Stoller; *House in California:* Hank Hoag. REBUILDING THE CITY, pages 378-385: 2, Read, Arphot, 3-5, 10-12, John R. Pantlin, 7, Sydney Newbery, 9, Central Press Photos, 13, Aerofilms. EGYPTIANS, pages 386-391: 1, Sydney Newbery, 2, 5, 11, de Wolfe, Arphot, 3, 9. 21, Sam Lambert, 4, McCallum, Arphot, 6, N. Gray, 10, Ernst Schiedegger, 12, 15-18, Galwey, Arphot, 14, John R. Pantlin, 19, 20, Toomey, Arphot. TWO SECONDARY SCHOOLS, pages 392-402: Galwey, Arphot. OBJECT LESSON, pages 403-406: From *Figures in a Landscape*, British Film Institute. CURRENT ARCHITECTURE, pages 407-410: *Factories at Stevenage New Town:* Henry Lewes; *ICI Building at Welwyn:* Colin Westwood; *Deciduous Fruit Board Building:* South African Architectural Record. MISCELLANY, pages 408-416. *Exhibitions:* 2, Peter H. Jones, 4, John Underwood, 5, The Ideal Studio. SKILL, pages 417-432: *Design Review:* 2, 11, Toomey, Arphot, 3, 8, 13, 17, 18, 22, 25, 27-29, Galwey, Arphot, 5, 14, 16, 21, 32-41, Council of Industrial Design, 5, 16, Birmingham Commercial Films, 21, Studio Swain, 26, S. F. Scorey, 32, 33, 35, Florence Studios 36-39, R. M. Ashford, 40, W. F. Sedgwick, 41, Sound Stills. *Techniques:* Drawings by B. A. Spearpoint.

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The Cover, a sequence of stills from the film *Figures in a Landscape*, examines the relationship between a perforated sculpture by Barbara Hepworth and a prehistoric hole-stone in Cornwall. The cine-camera with its moving eye, and the siting of highly-finished works of sculpture in the open landscape where they can be compared with natural and weather-beaten objects, re-opens in a stimulating way the problem of the landscape object and its significance—a problem which is examined (in the light of this film) by Reyner Banham on pp. 403-406.

363 **Marginalia**

364 **Correspondence**

364 **Acknowledgments**

366 **Frontispiece**

367 **Originality** *by Nikolaus Pevsner* In a recent book on nineteenth-century architecture, Mr. Goodhart-Rendel defended the eclectic inventiveness of Victorian designers by scouting what he called the customary assumption that buildings were better for deriving their details from works contemporary with them and not from the past, which he coupled with the (to him) erroneous conception of the style creating the architect and not the architect the style. To this Professor Pevsner opposes the objective historical fact that between 1900 and 1920 the architect, for the first time since about 1420, came into possession of a vocabulary of motifs and elements created by and for his own period, and not culled from the past, and that this process seems to have occurred spontaneously and simultaneously in various parts of the world. The men who fathered this style were indeed original in their manner of designing, but they were not pursuing the goal of personal inventiveness. To be original in this sense meant, between 1910 and 1920, to work in a style which did not yet exist, to shape a language in shaping a building, and there is a difference which cannot be argued away between this kind of originality and Victorian inventiveness in the handling of motifs already to hand. Though it is true that the Modern Style is now one from which the architect may borrow motifs and elements, the style itself does not, in Mr. Goodhart-Rendel's phrase add another string to the architects lyre, but provides him, rather, with a new and complete instrument.

371 **House in Maine:** *Architect, Serge Chermayeff*

375 **House in California:** *Architect, Calvin Straub*

379 **Rebuilding the City** *by J. M. Richards* There are two objectives to be aimed at in the rebuilding of the City: that the buildings erected should be good of their kind; and that their relation to one another and the existing buildings should carry on and improve the best traditions of the City. This is the ideal which Mr. Richards propounds in the opening paragraphs of his article, and on both counts he finds complete failure in what has been done to date. The Holford-Holden plan cannot, unfortunately, prevent the erection of the buildings which have been advertised for construction now that licences are more readily available, but these alarming monsters only occupy a small part of the area due for rebuilding, and there may, therefore, still be time to profit by the mistakes already made. Mr. Richards analyses the forces which shape the architecture of the City, forces of commercial inertia and financial pressure which cramp the hand even of the designer who aims to work in a style proper to his period and situation. In nearly every case architectural disaster is the product of overloading the sites available with buildings of excessive bulk—bulk which might not necessarily be objectionable if it was differently sited and differently shaped. So the architectural problem merges with the town-planning problem; amalgamation and regrouping of sites could provide a solution, and if habits of commercial rivalry prevent private owners from doing this, then the City Fathers, in the interests of their own reputation, should themselves embark on long range developments on a large scale.

387 **Egyptians: Their Character and Suitability to Contemporary Architecture** *by Nicolete Gray* Not only is Egyptian the best architectural letter-face we have, but documentary evidence from the period of its invention suggests that its origins are, in fact, architectural. Its slab-serif forms suited it to being painted or constructed, rather than drawn or carved, and it has left behind a richer legacy in architecture than in typography. Further, having been conceived in three dimensional terms it takes kindly to a cast shadow—which may once have been an integral feature of this face—and can thus be used in a rich variety of ways. Mrs. Gray's article examines the variability of Egyptian in form and mood, insists on the particular care which must be employed in its spacing, emphasises its qualities as an architectural pattern-maker and the subtle refinements to which some individual letters are subject. It has the advantage over Victorian heavy sans-serif faces, which are otherwise rather similar, of stability and balance—it is a formed, sophisticated letter design.

Two Secondary Schools

393 **School at Hounslow:** *Architect, Denis Clarke Hall*

399 **School at Ruislip:** *Architects, F. R. S. Yorke, E. Rosenberg and C. S. Marshall*

403 **Object Lesson** *by Reyner Banham* The particular status of the man-made object in the landscape was one of the special studies of the English surrealists but, in spite of the obvious importance of the subject as a guide to the siting of buildings and other artefacts, this particular line of practical aesthetics was allowed to drop. Now, however, a film of sculpture by Barbara Hepworth in various open-air settings in Cornwall has drawn attention to the subject once more and offers, as Mr Banham points out, not only a kind of basic primer of the object/landscape relationship, which could be most instructive to those who have to place man-made objects anywhere, but also suggests a way of opening the eyes of those who are blind to the arts of seeing, by offering them simple aesthetic forms under conditions—those of the cinema—where their visual faculties are most alert and most receptive. Sophisticated and unsophisticated alike have lessons to learn from these simple-seeming objects.

407 **Current Architecture**

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Directing Editors J. M. Richards, Nikolaus Pevsner, H. de C. Hastings

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Art Editor Gordon Cullen

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FIVE SHILLINGS

Changed circumstances and revised opinions are turning school designers away from the free-spreading layouts once so favoured toward compact block-like plans round central quadrangles for assembly and circulation–as shown in this impression by Kenneth Browne of a new school by Denis Clarke Hall, described and illustrated on pp. 393-397.

'. . . . . *The architect of the nineteenth and twentieth centuries need only differ essentially from the architect of preceding periods by having more than one string to his lyre. It may be customary to assume that designs whose details are derived from buildings contemporary with them and near at hand must be distinct in kind from, and greatly superior to, those that display the eclecticism of a wide knowledge; but the assumption is hard to justify. Indeed it would seem to be based upon the erroneous but popular conception that architecture must make the architect rather than the architect architecture, that what is called a style must always grow, culminate, and wane of its own agency, irresistibly compelling artists to materialize its various stages. That this has sometimes seemed to occur in the past and never seems likely to occur again cannot be denied; but its occurrence or non-occurrence can hardly be allowed to set up a radical distinction in works of architecture between the original and the unoriginal, between the creative and the mimetic. Architecture that is original may indeed be otherwise unsuccessful, whereas that which is unoriginal may nevertheless be valuable and satisfactory. In the only proper testing to which a work of art can be put—that of whether or not it pleases in the way intended by its maker—considerations of originality and unoriginality are of no importance.*' English Architecture since the Regency, *by H. S. Goodhart-Rendel*, 1953.

Nikolaus Pevsner

ORIGINALITY

Mr. Goodhart-Rendel, who last year wrote the paragraph quoted above, is a remarkable man. As an architect he is, after a phase of inventiveness in the contemporary idiom (Hay's Wharf 1931). now much consulted on work of restoration or remodelling of Georgian or Regency building, as a scholar he concerns himself exclusively with the Victorians. His favourites in the book from which I have quoted* are Charles Robert Cockerell, RA ('never has there been any more accomplished English architect than he'), and Bentley, but also Edwin Rickards (of Lanchester & Rickards), that fanciful inventor of French Baroque and Rococo trimmings. And in a paper which Mr. Goodhart-Rendel delivered at the RIBA in 1949 on 'rogue architects' (a happy term invented by him) he spoke with an unmistakably fascinated shudder of such recklessly inventive, such crushingly insensitive, men as E. B. Lamb, Thomas Harris, Joseph Peacock, Bassett Keeling. ('You find buttresses that have come loose from the walls and got into the windows, and lots of crowded, very cuspy tracery and all sorts of funny arches and splays.') Now when Mr. Betjeman speaks of such things he means it and wishes to convince us to honour such forbears by offerings of plentiful pinnacles. But Mr. Goodhart-Rendel does not plead for such things; for he pleads seriously. His plea is for, shall I say, Mr. Curtis Green's Stratton House, Piccadilly: 'If many of our new street buildings were as good as this, London would soon become a handsome city indeed.' Published in 1953.

Is it perverse? Is it capricious? No; it is a perfectly logical result of consistent reasoning, the other result of which is that in this book, intended to go on up to the present day, the Kensington Cinema finds a place but not Impington, not Highpoint, not the Pimlico flats, not The Lawn at Harlow.†

* *English Architecture since the Regency*, H. S. Goodhart-Rendel. Constable 1953, Price 25s.

† It may be said that this is due to the fact that the book consists of lectures delivered in 1934. But Mr. Goodhart-Rendel might have felt it necessary to bring them up to date.

So much for Mr. Goodhart-Rendel. But the essential questions remain open. Is perhaps Stratton House as good, that is aesthetically as valuable, as Pimlico? Must Pimlico be given precedence because it is original and Stratton House isn't? And is Pimlico indeed more original? Is it not merely what Mr. Goodhart-Rendel calls derived from buildings contemporary instead of past? And if so, is it yet better to choose patterns in the twentieth than in the eighteenth century? And what precisely would 'better' mean in that case? Better aesthetically or perhaps better morally?

There is plenty to answer here, and what the answers are will depend on one objective historical fact which Mr. Goodhart-Rendel refuses to admit, the fact that from 1420 in Florence and 1520 in the North to about 1900 or 1920 the architect had to express himself and his age (if this is what architecture—as all art—demands) by means of motifs and elements not created by him and his age but by past ages, whereas after 1900 or 1920 he had once again at his disposal motifs and elements evolved for their power to express our and no other age. This, to say it again, is a fact, and no one can deny that the architects who created this new language of form were men of originality. Yet their creation was hardly an act of self-conscious inventiveness. Originality on this scale is something much more mysterious. Indeed, how and why a style is born at one particular moment is always a mystery and must remain one. It happens only rarely, about 1140 at St. Denis, about 1420 in the work of Brunelleschi, Masaccio and Donatello, and it happened again about 1900-1914. Mr. Goodhart-Rendel blasphemes this mystery, because he lived through it and could not recognize it. He sees established on the throne a new rule, this original style of the twentieth century, he sees how in many places, essentially independent of each other, architects begot it and then helped to rear it, and so he must deny that architecture makes the architect and that a style grows on its own. But it does. It does with the proviso that it is neither made nor reared anonymously. Much has been made of the so-called anonymity of the Middle Ages, and scholars like Mr. Harvey deny it and try to prove that every step in the Middle Ages (as today) is thought out and made by individuals. That is true, but the concept of anonymity is truer. It refers to the very mystery of which we are speaking, the fact that what is new in an age—historically, socially, philosophically new—calls for aesthetic expression, and that that expression takes sufficiently similar forms in the independent pursuits of a chosen few to permit the use of the word style.

Style is what ties together the aesthetic achievements of the creative individuals of one age. The style of the twentieth century is an original style in the sense that its expression as well as its forms are original, whereas in the Baroque for instance the expression is, but many of the forms are not. Originality of style is distinct from originality in individuals, and, as far as they are concerned, what can be said is that at the beginning of a style you find always men of original genius. At its end stand the most accomplished, the most sensitive perfecters. The beginning is ruthless, the end academic (in the best sense of the word). Originality in a style and a man should only be applied to what is fundamentally new. In that sense originality is the sign of the greatest mental and emotional power. The younger among us did not experience and some of the older may have forgotten what it meant to be original about 1910 or 1920. To express oneself in a language not yet in existence, to shape the language while shaping the building, here was indeed an effort and an achievement greater than any since the Middle Ages. The difference in kind and in force between this originality and the inventiveness of Mr. Goodhart-Rendel's rogues is undeniable. Originality is more exacting, inventiveness more seductive.

Today, as Mr. Goodhart-Rendel rightly says, the 'modern style' has become one more to borrow elements and motifs from. The effort is not greater now to decide for a window with an

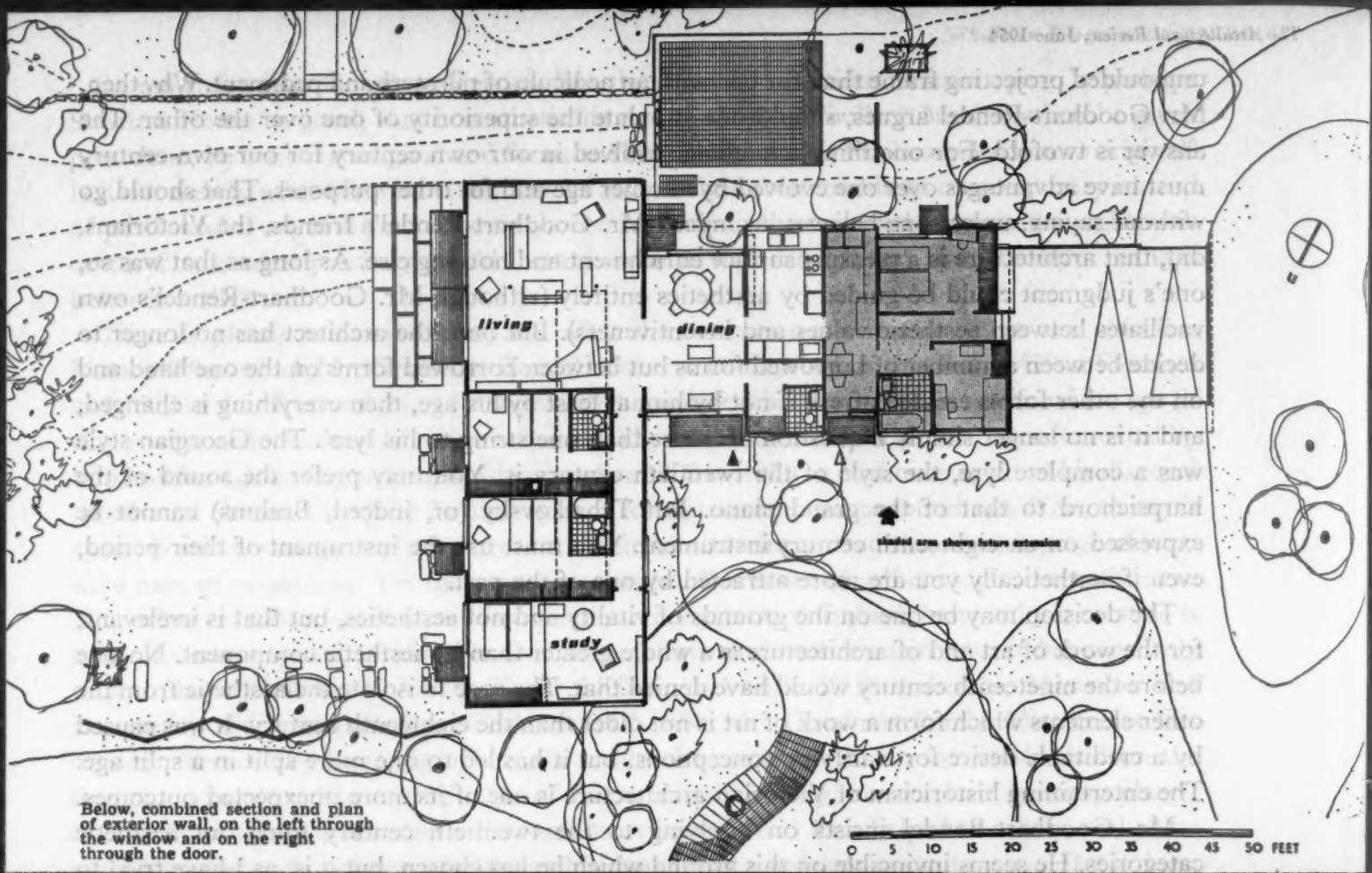
unmoulded projecting frame than for one with an aedicule of pilasters and pediment. Why then, Mr. Goodhart-Rendel argues, should one stipulate the superiority of one over the other. The answer is twofold. For one thing a language evolved in our own century for our own century must have advantages over one evolved by another age and for other purposes. That should go without saying, unless one believes, as indeed Mr. Goodhart-Rendel's friends, the Victorians, did, that architecture is a pleasing surface enrichment and nothing else. As long as that was so, one's judgment could be guided by aesthetics entirely (although Mr. Goodhart-Rendel's own vacillates between aesthetic values and inventiveness). But once the architect has no longer to decide between a number of borrowed forms but between borrowed forms on the one hand and on the other forms created afresh if not by him at least by his age, then everything is changed, and it is no longer simply a question of 'more than one string to his lyre'. The Georgian style was a complete lyre, the style of the twentieth century is. You may prefer the sound of the harpsichord to that of the grand piano. But Tchaikovsky (or, indeed, Brahms) cannot be expressed on an eighteenth century instrument. You must use the instrument of their period, even if aesthetically you are more attracted by one of the past.

The decision may be one on the grounds of vitality and not aesthetics, but that is irrelevant; for the work of art and of architecture is a whole greater than its aesthetic component. No one before the nineteenth century would have denied that. The urge to isolate the aesthetic from the other elements which form a work of art is not older than the eighteenth century. It was caused by a creditable desire for clarifying conceptions, but it has led to one more split in a split age. The entertaining historicism of Victorian architecture is one of its more unexpected outcomes.

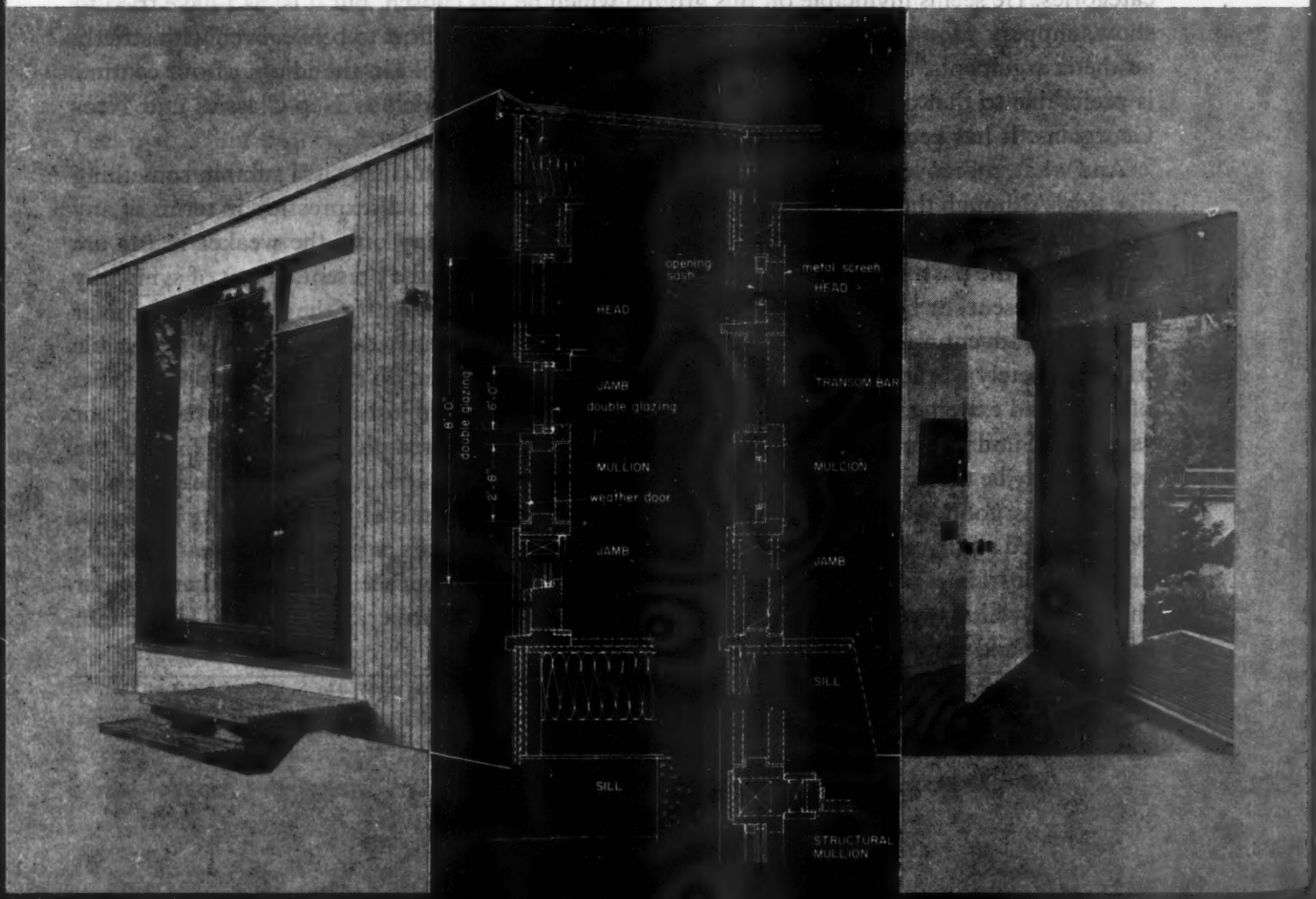
Mr. Goodhart-Rendel insists on applying to the twentieth century none but aesthetic categories. He seems invincible on this ground which he has chosen, but it is, as I have tried to show, slippery ground. Moreover, it might be well worth an effort to prove, even with strictly aesthetic arguments, that the best work of the architects who build in the idiom of our century is preferable to that of even the most impeccable or most capricious Neo-Classics and Neo-Georgians. It has been attempted in THE ARCHITECTURAL REVIEW.*

And what, moreover, such attempts bring out with the greatest clarity is, I submit, something like this. Although theoretically the best architects might choose self-expression in terms of any style of the past as well as of the present, it appears that today only the weaker hearts are attracted to the past. That may be so because they are afraid of the present, or out of sympathy with the present, or because they wish to impress those clients who for the same reason prefer security to adventure, or, finally, because certain finesses are indeed more happily applicable to a completely worked-out and tried style such as the Palladian. So extreme regard for points of detail and extreme sensitivity may lead an architect to the Neo just as much as expediency or escapism. Similarly in the field of the twentieth century style strength of mind and faith in the century may be the propelling power or else watchfulness of fashion. It should not be surprising that reasons good, bad and indifferent can lead the designer into either mode of expression. What needed stating here is that somehow, in the last twenty years, regardless of what aesthetic argument postulates, all the active, the exploring and the consistent seem to have gathered under the banner which was first carried by Wright and Perret, by Garnier, by Loos and Hoffmann, by Behrens and Gropius and by Le Corbusier.

* See *Recent Building in Oxford and Cambridge* by J. M. Richards, AR, August 1952, and *Building with Wit* by N. Pevsner, AR, April 1951.



Below, combined section and plan of exterior wall, on the left through the window and on the right through the door.



HOUSE IN MAINE

ARCHITECT | **SERGE CHERMAYEFF**

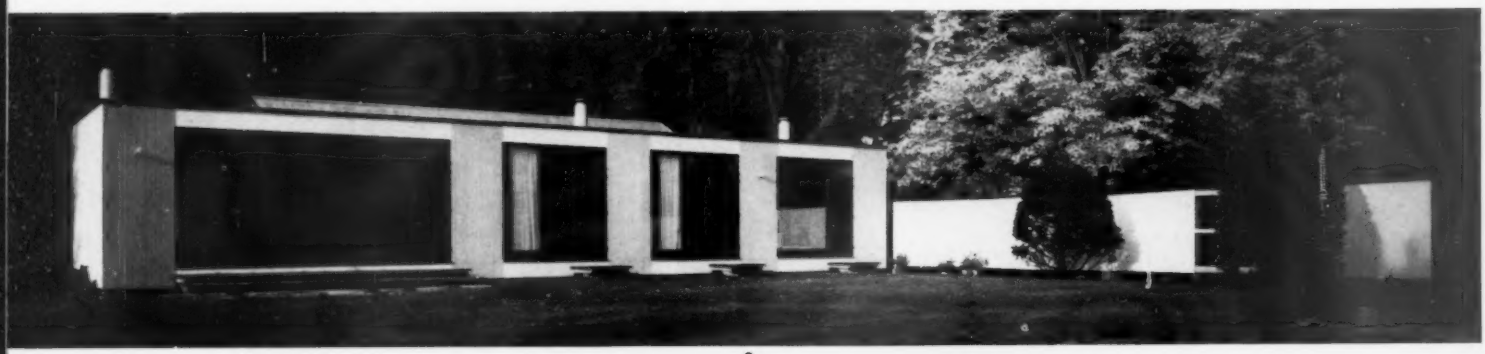
1, part of the end wall of the living and bedroom wing showing the 12-inch high overhang. Walls are of vertical, white-painted t. and g. weatherboarding.

The site is a magnificent rocky point jutting out towards islands, inlets and yachting harbours north of Portland. The house was built on the site of the old family summer house, pulled down some years earlier, which left vast 19th century cellars and a few unused remaining outhouses in the midst of a typically well-planted, park-like garden with fine, fully-grown trees and shrubs. The view from the house of several of the largest maples and elms determined many fenestration positions. The old basement was filled, utilizing only that part which offered greatest economic advantages in relation to existing utilities such as drainage and the drive. The built up level plateau, typical of the formalities of the 'large' house of its era was largely scraped away to reveal again the natural ledge and to allow the eye to drop down to the water more easily in the length of the point to the east. The whole house cantilevers at an average height of 12 inches above ground in all directions and is entered everywhere over open oak slat steps. These two devices absorb variants in snow level and minimize the risk of snow drifts and ice formation over the steps.

Each room has its own outdoor exit through a double door, the outer one being a louvre shutter screened inside, the inner one being a solid weather stripped storm door to be kept tight with the help of two coach type dead locks during the winter. These double doors, except in the entry hall, have a transome, top hung, for controlled winter ventilation. The windows proper are 6 foot by 8 inch sheets of fixed double glazing for light and view only and these elements become a standard unit used throughout, singly or in combination, with the exception of the kitchen. Summer through-ventilation is obtained between louvres and the clerestory awnings in the central lobbies and bathrooms. This clerestory also extends into the living room, where it provides a 'back-light' source of winter sunlight. Because the orientation was largely dictated by the old foundation and the view, the two centre bedrooms are partly lit from the west through the lobby and bathroom clerestories. Joinery, for economy's sake, was kept at the minimum, all cupboards being covered by bamboo curtains. A folding slat partition is provided to screen the dining area from the entrance, while a second, in the owner's study, allows this to be divided into sitting and sleeping spaces for guests.

The brick from the demolished laundry and the fine slabs of Vermont granite which was the facing of the old foundations have provided material for new paving and outdoor steps in combination with the oak slat steps. Many well-grown evergreens on the site were root pruned and moved into new positions. Wild flowers have been sown on the south and east slopes of the point, keeping the mown lawn to the minimum close to the house.

2, general view of the living and bedroom wing. The screen on the right gives the garden privacy from the road. 3, the main entrance approach. On the right of it a future extension containing servants' rooms is planned. 4, on the facing page, detail of the living and bedroom wing exterior, which faces on to the garden, showing the slatted steps from each room. 5, the garden terrace which lies behind the entrance lobby.



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HOUSE IN MAINE

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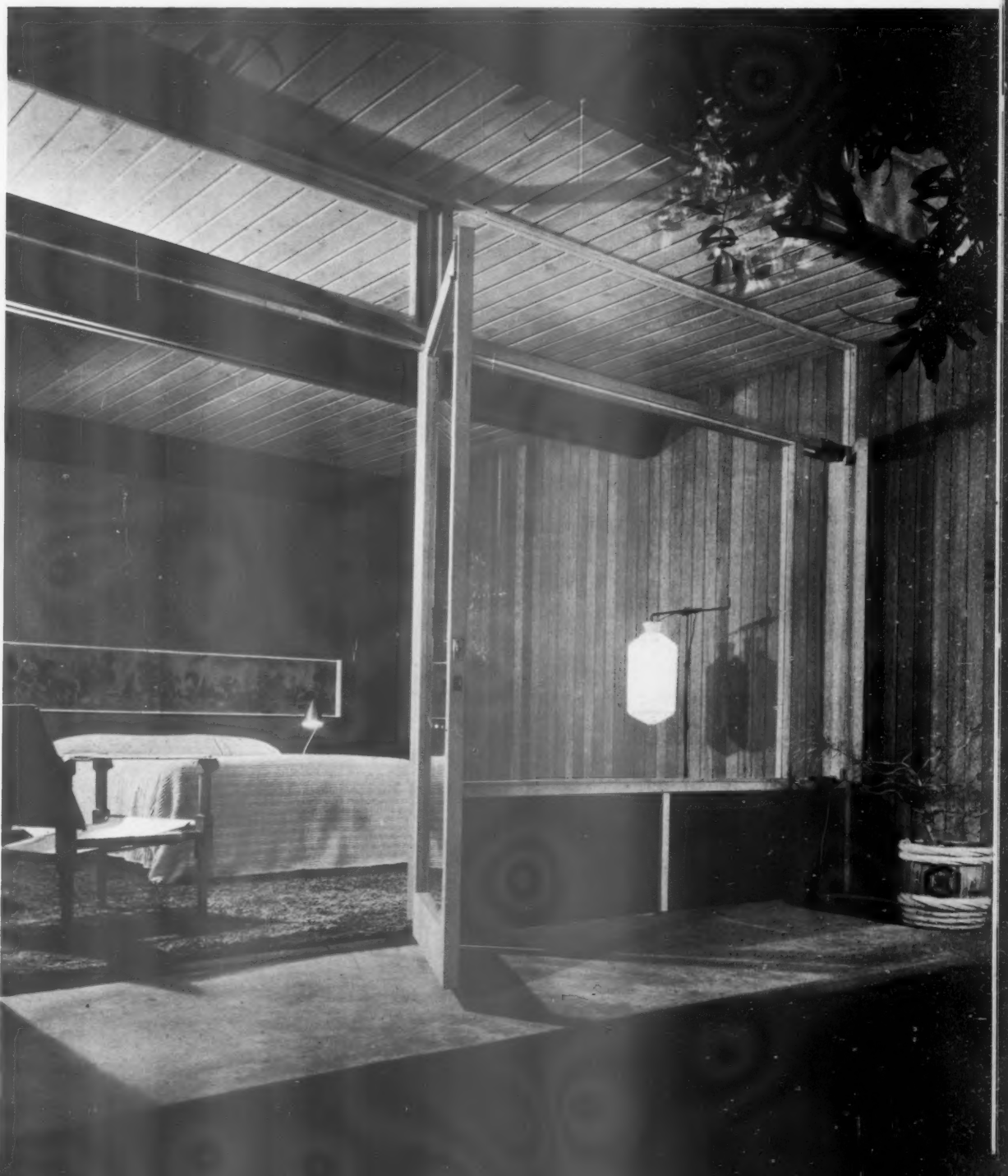
6 and 7, views into the living room from from the garden and vice versa. 8, part of the living room looking towards the main entrance. 9, the kitchen which overlooks the terrace seen in 5. 10, detail of the bathroom. 11, the master bedroom from the study formed by drawing the curtain seen on the left.

HOUSE IN CALIFORNIA

ARCHITECT | **CALVIN STRAUB**

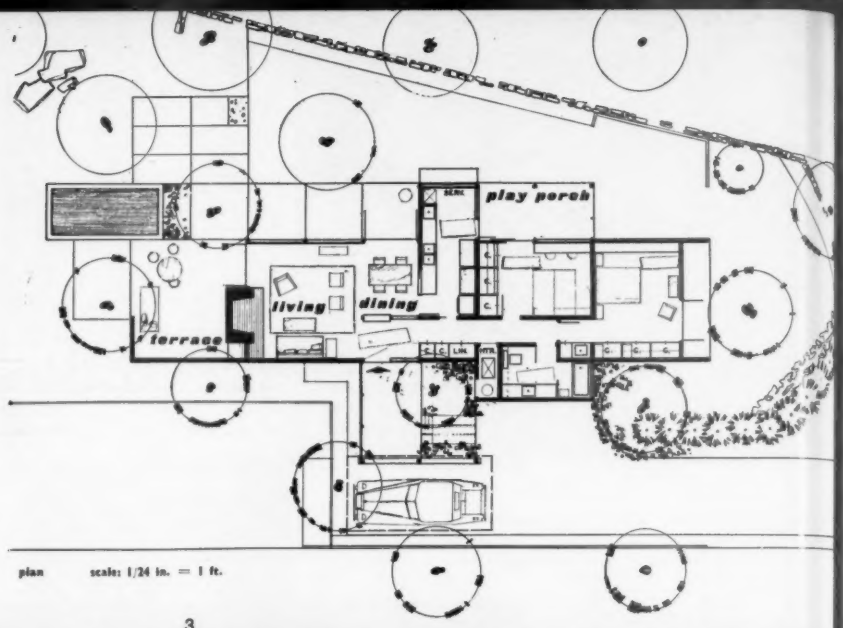


1, the main bedroom. The t. and g. boarded wall and roof are extended to the perimeter of the underslab to form a small covered terrace.

This house, designed by the architect for his own family, served as an experiment into new techniques of low cost construction, particularly in the use of exposed post and beam framing, inexpensive finishes, and simplified mill details. Much of what was learned here has served as the basis for subsequent work. Most of the construction was carried out by the architect and his wife.

The site, a small plot below the road on the edge of a dry canyon, was part of an old olive grove. The trees became an integral part of the spatial organization of the house, serving as an extension of the ceiling plane as well as providing a solid screen for the house from the street and adjacent houses.

The structure is a simplified bolted wood frame composed of two 2-inch by 12-inch timbers with a spacer which is joined to a 2-inch by 8-inch column with two 2-inch by 4-inch trimmers on either side. These frames



plan scale: 1/24 in. = 1 ft.

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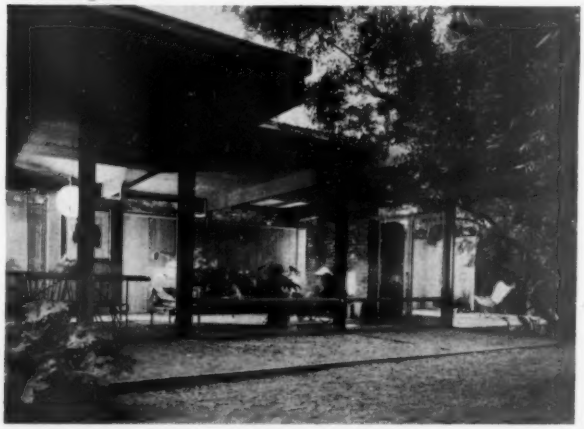
were erected at 8 foot centres, independently of the walls and were sheathed with 2-inch tongue-and-groove solid planking. Walls are non-load-bearing and serve only as panels and weather barriers. Glass walls were fixed with ventilation through doors and transom sash above the 6-foot 8-inch transom level. Surface materials being of dry construction are either Douglas fir plywood or redwood tongue-and-groove vertical siding. Roof insulation is ½-inch rigid fibre glass boards. The roof itself is composed of three-ply composition roofing and hot asphalt, surfaced with one-inch crushed green desert rock.

The heating is by an underslab perimeter forced hot-air system.

The finishes used are primarily one coat creosote and oil stains. Creosote finishes are the best preservative for California redwood, requiring no maintenance, and weather to a soft natural finish.

2, the main entrance and living room beyond. The bookcase unit on the right screens the dining area. 3, the carport and entrance approach. On the right is the exterior of the heater room and bathroom. 4, view from the garden of the main living area the terrace extension of which is seen on the right.



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5, the dining area. On the opposite side of the panel beyond the dining table is the bookcase, seen in 2, screening this area from the entrance. 6, the living room hearth showing the doors opened to the main terrace on the right.

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The depressing contrast between what we hoped would be the outcome of the opportunity of rebuilding the City offered by wartime destruction and what we see being built,-which is the subject of the following article, exists not only in the quality of the buildings (three post-war office blocks are shown on the left) but in their lack of coherence and their scale. Above are a couple of Gordon Cullen's illustrations to the Holford-Holden 1947 plan, in which he shows how modern buildings, given imaginative control of the spaces between them, could preserve and even enhance the City's characteristic intimacy of scale. Instead this is being destroyed. Can the process be arrested before all charm and character are submerged beneath the crude, the chaotic and the commonplace?

CRITICISM

J. M. Richards

REBUILDING THE CITY

THE CITY OF LONDON ON THE BRINK OF DISASTER

It is a tragedy that the Prime Minister's announcement in November promising an increased flow of building licences to the City, and its confirmation by the Minister of Works in January, should have to be greeted by all who mind about the future of the City—and indeed about the future of English architecture—not with confident expectations but with misgivings and alarm. What has been done so far towards rebuilding the City has been a bitter disappointment after the high hopes with which we ended the war, and a radical change of heart is needed if deeper disappointment is not to result from faster rebuilding.

There are two objectives to be aimed at: that new buildings to be put up in the City should be good of their kind, and that their relationship to each other and to what exists already should carry on and improve the best traditions of the City. As to the first, an examination of the buildings so far put up can only produce a verdict of almost unrelieved failure. As to the second, enough has not been built for a verdict to be pronounced, but there is no sign yet of anything but complete failure here as well. Building schemes are being conceived piecemeal, with no apparent co-ordination or thought of the effect of each part on the whole.

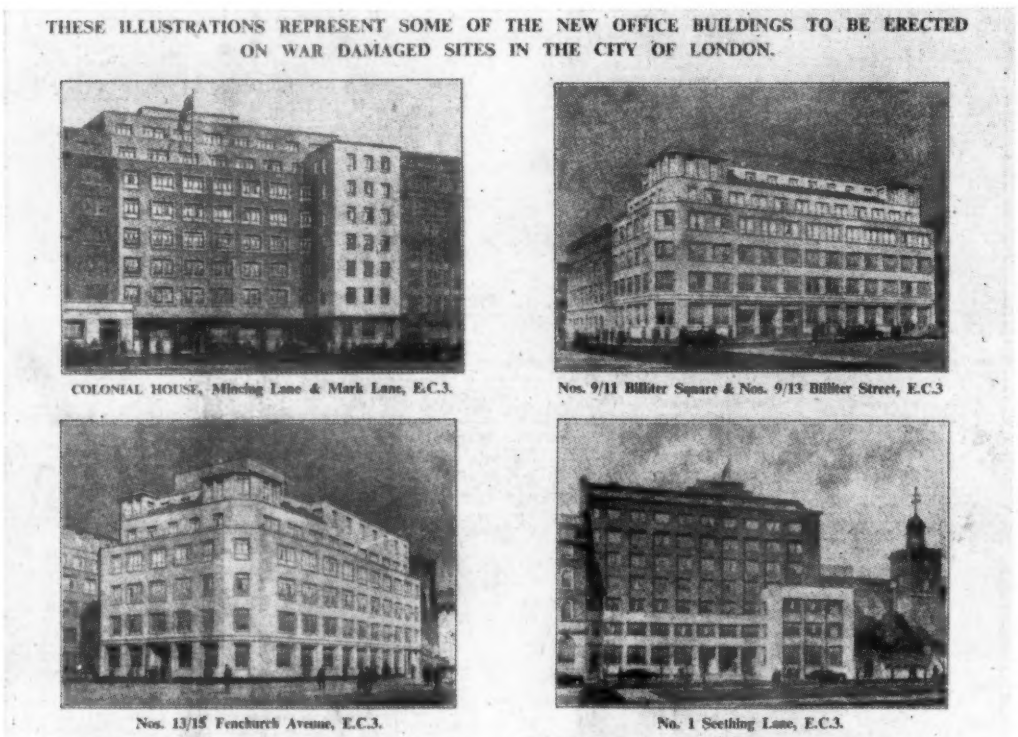
This last statement needs qualification because there exists, of course, the Holford-Holden City of London reconstruction plan, most of the proposals of which have been incorporated in the County of London development plan since the LCC became planning authority for the City. That was a most useful document, but its authors would be the first to admit that even so comprehensive a survey and reconstruction scheme as theirs only provides the framework from which a new city can spring, well or ill designed according to the spirit that is abroad, and the talents that are applied to each various

task, at the time when the plan is being implemented. That time has now come, as the speeches by members of the Government, already referred to, indicate. The question we have to ask is whether it is not already too late to prevent piecemeal rebuilding on unco-ordinated sites with clumsy and insensitive architecture from spoiling an opportunity that may never recur.

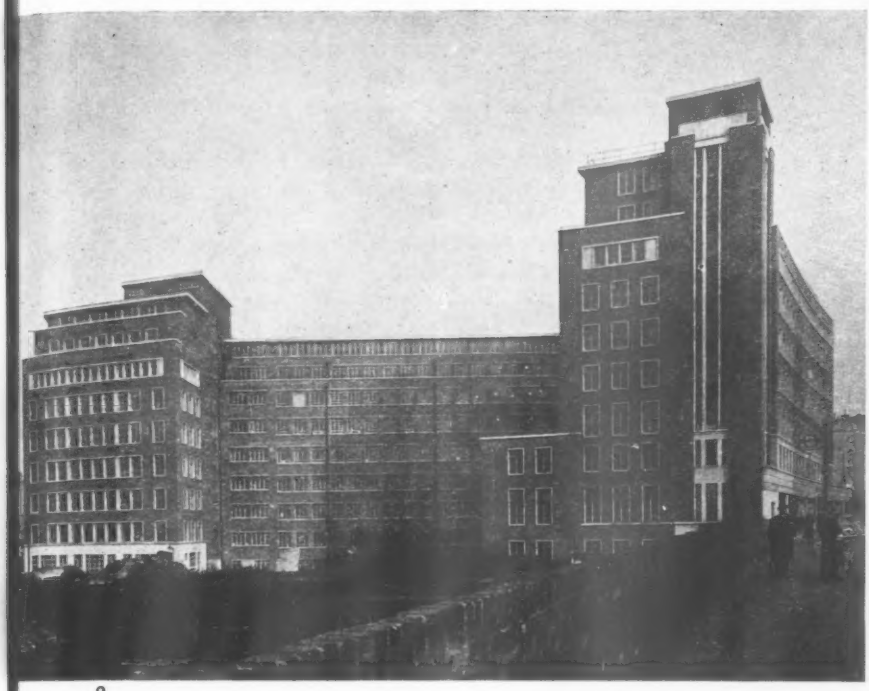
My first illustration, 1, taken from a recent newspaper advertisement, suggests that it is indeed too late, because we must add to this a number of buildings already completed; for example Atlantic House, 2, Dunster House, 3, King's Beam House, 4, Millocrat House and Plantation House, 5, and an even greater number of which construction is already under way, such as the extension to Lloyds, 6, or of which plans have been passed and construction is about to begin—for example the new Bank of England offices, 7. And more designs of a similar kind are being published almost daily. Two—the *Financial Times* building, 11, and the Bankers' Clearing House, 12, are reproduced on page 384.

These present a formidable, and indeed a frightening, array. If they are truly representative of the city to which we are doomed—and for which we must take the blame for burdening posterity—then we are right to despair. But if we look at the map, or at air views like 12 (reproduced on page 384), we can see that what has been built is small compared with the sites not yet built on, and that there are large areas still open to comprehensive development. So perhaps it is still worth trying to benefit from our mistakes by asking what has gone wrong so far. To begin with the question of the architectural quality of individual buildings: what measures are needed to transform a standard of architecture of which we must be ashamed into one of which we can be proud?

A glance at the illustrations accompanying this article does not suggest that such wholesale condemnation is too strong. Nearly every office block (and the rebuilding of the City is largely a matter of office blocks) put up, or indeed designed, since the war either tamely conforms to the already outworn neo-Renaissance tradition which did so much to despoil the dignity of London between the two wars, or sets out aggressively to outmode it without substituting for it any up-to-date equivalent of Renaissance taste and discipline, with the result that while buildings have grown larger they have got coarser and clumsier, and any attempts to give them architectural form and character, either by the grouping of openings, the sub-division of wall areas or the application of embellishment, have failed through being arbitrary and wholly superficial.


THESE ILLUSTRATIONS REPRESENT SOME OF THE NEW OFFICE BUILDINGS TO BE ERECTED ON WAR DAMAGED SITES IN THE CITY OF LONDON.
COLONIAL HOUSE, Mincing Lane & Mark Lane, E.C.3.
Nos. 9/11 Billiter Square & Nos. 9/13 Billiter Street, E.C.3
Nos. 13/15 Fenchurch Avenue, E.C.3.
No. 1 Seething Lane, E.C.3.
WORK ON THESE SITES WILL START
AS SOON AS LICENCES BECOME AVAILABLE.
PLANS HAVE BEEN PREPARED, BUILDING CONTRACTS SIGNED AND TENANTS ARE WAITING TO OCCUPY THESE PREMISES.
THE CITY OF LONDON REAL PROPERTY COMPANY LIMITED

1, *a newspaper advertisement which first revealed (in December of last year) the type of office building without architectural distinction or town-planning relationship that property owners are seeking to erect on vacant sites throughout the City of London, proof of the failure of the authorities to provide the coherent rebuilding scheme, with an insistence on high architectural quality, that was hoped for after the war. Facing page, some of the office blocks built since the war and criticized in this article as being old-fashioned in conception and clumsy in execution: part of the process of brutalization to which the City is being subjected.* 2, *Atlantic House, Holborn Viaduct, by T. P. Bennett and Son (this was built for use as Government offices, under the Lessor Scheme; it is to be extended to cover the site in the foreground).* 3, *Dunster House, Mincing Lane, and* 4, *King's Beam House, Great Tower Street, both by Howard Souster and Fairbairn.* 5, *Millocrat House, Eastcheap, and Plantation House, Mincing Lane, both by Albert W. Moore and Son.*



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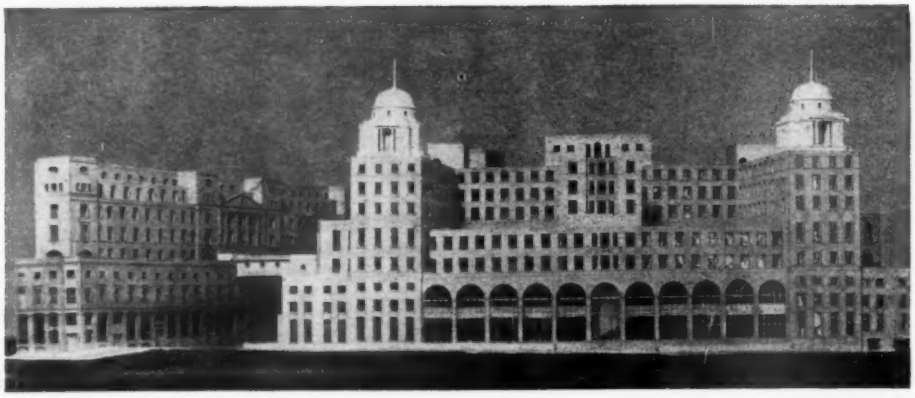
They are not based on the expression of structure or any other principle.

The arguments against inflated neo-Georgian are so clear that it is not necessary to pay much more attention to buildings in this category than to deplore them. Not only are they culturally sterile and structurally false, but on a strictly visual basis they are doomed to failure simply because their very size precludes the successful use of an idiom evolved for more domesticated purposes and a far smaller scale. It is the second category of buildings, those that do not aim at reminiscences of period styles, which demand critical attention. In discussing these we must be frank enough to acknowledge that for the most part we are not concerned with architects who are seriously tackling the difficult task of evolving a modern equivalent of the Georgian style suitable for massive urban structures, but who do not happen to be doing it very well. Indeed we are concerned with designs in which strictly architectural values play very little part. Though these buildings are architect-designed, the architects are so much the sport and victim of their circumstances, are so completely in the stranglehold of big business, that they carry only a part of the responsibility for what has gone wrong. Financial issues far outweigh issues that depend on aesthetic values, design principles or civic propriety. With such a distortion of values often goes, as well as an anarchic or insensitive outward appearance, an obsolete style of planning, involving the use of multiple light-wells, airless courts and all the devices necessary to produce imposing street façades that can serve for show as well as for shelter. But here, too, we cannot altogether blame the architects. For one building owner (and these do still exist) who thinks he owes it to the prestige and dignity of the City to embark on façades embellished with all the classical paraphernalia, there are several who insist, for reasons of self-interest, on cramming all possible



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The designs for two neo-Renaissance buildings which make an important contribution to the City's rebuilding programme. Though their clumsy design and unsuitable style of architecture have been strongly criticized, the extension to Lloyds, 6, by Terence Heysham (of Sir Edwin Cooper and Partners) is already under construction and the plans for the Bank of England offices (immediately east of St. Paul's Cathedral), 7, by Victor Heal and Smith, have been passed. 8 (below), Bucklersbury House, near the Mansion House, by Campbell-Jones and Sons in association with Humphrys and Hurst, the construction of which is just beginning. Although after long negotiations with the Royal Fine Art Commission this emerged as a tolerably straightforward and contemporary design, with the merit that the high portions are well set back and no offices face into closed courts, the bulk remains far too great for the site.

accommodation on to the site and leaving the architecture to take care of itself.

The shortcomings of recent City architecture and the unenlightened spirit of which it is the expression were frankly described by Sir David Eccles in his speech at the Mansion House in January: 'I wish to be blunt,' he said, 'about the disaster which threatens. I fear that unless swift and effective action is taken we shall see fat and familiar, mediocre and characterless neo-Georgian architecture rising from Hitler's ruins. . . . I am sure everyone here wants the new buildings in the City to suggest to the world at large that London is not living in the past but has something vigorous, constructive and beautiful to say about her future. You will not get such buildings if you ask for repetitions of pre-war commercial architecture.'

He also said that 'you only get good architecture if the developer demands it and the architect is capable of producing it' and pleaded that developers should give the younger and more enterprising architects their chance in the City, where a proper regard for the value of tradition is too often confused with a refusal to move with the times or to accept the new ideas that changing times bring with them. Though it is a mistake simply to equate younger architects with better architecture, it cannot be denied that the fresh thinking, starting with basic architectural principles, necessary for the successful solution of relatively new problems—of which the massive office block is one of the hardest to solve—tends to be the perquisite of the younger generation that grew up free of the restrictions of the academic strait-jacket.

Without such fresh thinking an unsatisfactory compromise is the best that can be anticipated. Compromise is also the only outcome of the policy of relying for the maintenance of architectural standards on the various public bodies charged with overlooking the designs for new buildings, whether one thinks of the planning department of the London County Council, of the City Corporation's own planning department or of the Royal Fine Art Commission. All the foregoing are necessary and valuable bodies, performing difficult tasks conscientiously, but committees cannot design, they can only ameliorate. Theirs is largely a negative control, though in several instances they have saved us from major errors of taste or judgment.

One such instance is Bucklersbury House, 8, which after a long gestation lately emerged as one of the

8

most promising of the post-war City projects. That this is so is largely due to the intervention of the Royal Fine Art Commission, who were able not only to suggest improvements to willing architects, but to support them when their design had achieved a refreshingly restrained and contemporary character against a client with predilections for the heavily ornate. Yet it is not a perfect building, partly because it is a compromise but chiefly because it tries to pile more accommodation on to the site than it ought to be made to bear. To this the Royal Fine Art Commission most strenuously objected, but was overruled on appeal by the Government in the person of Mr. Harold Macmillan, the Minister of Housing and Local Government, a rare instance, admittedly, of authority coming down on the side of business interests and against civic enlightenment.

In other respects, however, authority is constantly —if unintentionally—on the side of mediocrity in architecture. Architects legitimately complain that it is made unnecessarily difficult for them—and sometimes nearly impossible—to produce enterprising and freshly conceived designs because they are so hedged about by controls and regulations—of structure, daylighting, fire safety and the like—that these almost design their building for them. It is another form of strait-jacket, even more frustrating to the architect with ideas than to the architect who adheres to the conventions.

The visual problems we are concerned with arise from the vast size and bulk of the modern office building more than from any other single cause. How these problems can best be solved is not only a matter of architectural sensitivity and conscience—of skill in organizing the parts of the building—it is also a matter of siting and of the building's relation to other buildings and to the City as a whole.

This brings us to our second consideration: to the urgent need for planning and co-ordination, not only on the ground but in the air. A good street plan is one of the basic elements of town design, but it by no means guarantees a well designed town. The Holford-Holden plan concerned itself with the third dimension to the extent that it put forward some very important recommendations about day-lighting, which set the City firmly on the road towards the stepped-back building instead of the built-up street façade with closed courts behind it. This is an important step forward, for the City has hitherto been densely built up with canyon streets and closed-in light-courts as the typical view, 9, illustrates. But, however sound in principle, this new policy does not lead automatically to well grouped and well related buildings. In spite of an elaborate system of planning consents, and even taking into account the latest efforts of the LCC, referred to below, there is still no satisfactory machinery for ensuring that at the essential stage a view is taken of the whole picture.

Take for example this vexed question of height. When complaints were made, in the Royal Fine Art Commission and elsewhere, of the excessive bulk of Bucklersbury House, what was particularly meant was that it would rise too blatantly into the traditional City skyline and overpower its surroundings. They were powerful arguments (though not powerful enough to prevent the building going up), but were taken by many people to imply that high buildings were altogether undesirable in the City. Yet there is nothing wrong with height as such, as long as it is in the right place—and certain sites in the City may well be the right place.

There is an existing City tradition of vertical punctuation represented by the Wren steeples, of which a series of slim skyscrapers, carefully placed, might be a quite inspiring contemporary equivalent, related to the new scale which increased land values and modern building techniques have inevitably brought into being. And indeed if the aim is solely to preserve as much as possible of the old scale and the views of the Wren steeples, there is still much to be said for permitting a few slim skyscrapers*, between which the City panorama could be seen and enjoyed, as being less obstructive than large acreages of building of perhaps half their height.

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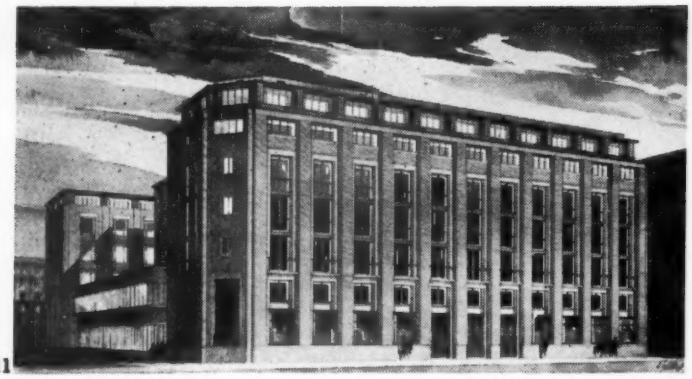
9, a typical pre-war City view (this one was taken from the top of the Monument) showing the canyon streets resulting from building up to the maximum height permitted along the perimeter of the site and (left of picture) the bleak interior courts into which many of the offices in buildings planned on this principle look. Some post-war buildings, encouraged by the daylighting code embodied in the Holford-Holden plan, avoid these faults (e.g., Bucklersbury House opposite), but 10 shows how the built-up street frontage also persists: the long fussily designed frontage formed by Millocrat House, Plantation House and King's Beam House (see page 381) seen from Eastcheap with the Tower of London in the far distance.

* There are signs of such a policy being introduced on the *fringe* of the City, though chiefly for housing purposes and more, it seems, as a result of a series of unrelated decisions to give planning consent to taller buildings than as part of a concerted policy. Joseph Emberton's triple 12-storey tower flats in Finsbury, a few yards north of the City boundary, are already up, Chamberlin, Powell and Bon's Golden Lane housing scheme with its central 14-storey block is under construction and provisional planning consent has been given to a 13-storey point-block by John Grey nearby and to a 15-storey block of offices by John Lacey at London Bridge, just across the river from the City.



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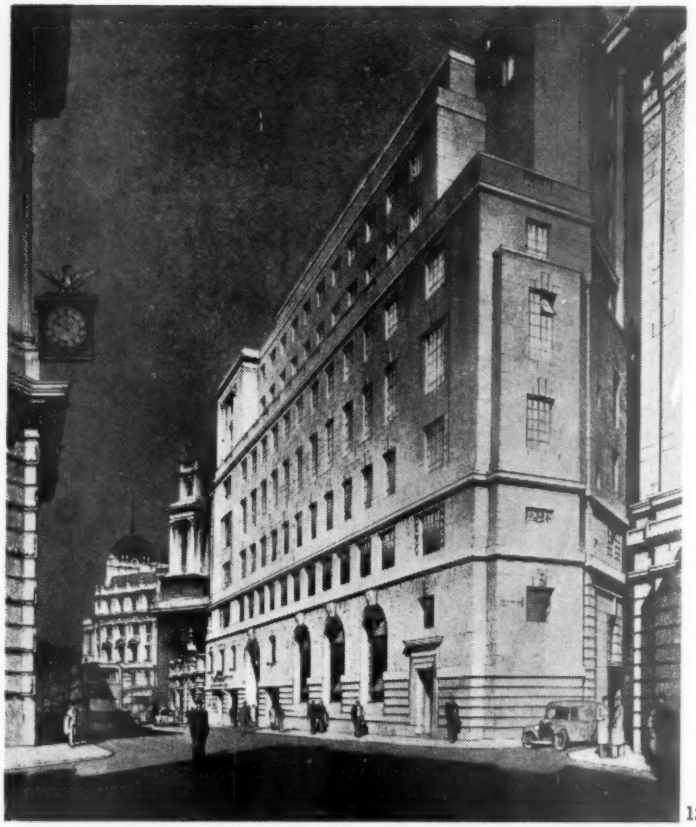

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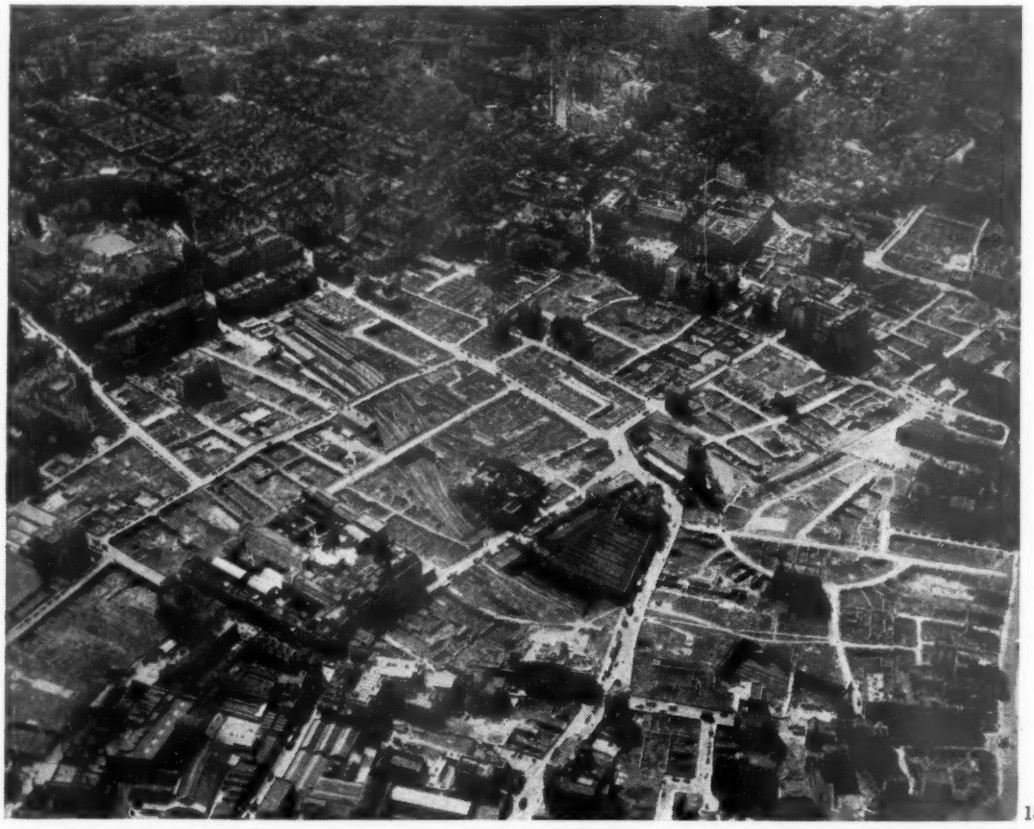
The process of equipping the City with individually designed blocks of offices in various commercial or neo-Renaissance eclectic styles seems due to continue far into the future, as revealed in this year's Royal Academy Exhibition. Two drawings from the exhibition are reproduced above: 11, *offices for the* Financial Times, *Cannon Street, by Prof. A. E. Richardson;* 12, *the Bankers' Clearing House, by Austen Hall.*

For the architectural effect of height does not depend on feet and inches measured vertically but on silhouette. What is so destructive of the whole character of the City, as well as its agreeableness as a place to work in, is the even levelling upwards over large areas at a time which takes place when every site is developed to the maximum extent permitted by the plot-ratio of 5½ at present enforced. The principle of the plot-ratio as a method of controlling density and ensuring a proper standard of daylighting is unexceptionable, but it should not be applied as an invariable rule to every site however small. A far higher ratio on an isolated site can be counterbalanced by lower ratios on surrounding sites, so to provide a greater variety of skyline and allow light and air to penetrate into the streets between occasional high buildings as well as to allow the planning of maximum occupancy at whatever points in the City circumstances may require.

There are obvious difficulties about pursuing such a policy when land ownership and building finance are organized as they are. To allow one owner to develop a site with a high building with the maximum profit to himself, and to restrict the owners of



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Though the time that remains before it is too late to save the City from complete disaster is dangerously short, there are still large areas which could be rebuilt to a coherent plan if the authorities were sufficiently determined. 13, *an air view taken last summer of the area north of St. Paul's.*

adjoining sites to very low density development represents a course which poses financial problems that are probably beyond the capacity of the present compensation and betterment clauses in the Town and Country Planning Acts to solve. The rational answer is to amalgamate sites, as was forcibly advocated at the end of the war, enabling large areas to be planned and developed at one time and the building owners to share the financial benefits of high building and spread the loss of potential profits due to restricted building.

If deeply rooted habits of commercial rivalry should prevent property interests from co-operating in this way, even though to do so is clearly in their own interest—as well as the interest of London—then the alternative is for the City Corporation itself to embark on large-scale development, utilizing its powers of compulsory acquisition of land. Such a policy was envisaged in the plans made after the war, but the City Fathers have shown a disappointing reluctance to implement it. They should not shirk this duty any longer. Public initiative of this kind, which demands resources on a scale that only they can easily muster, is clearly the best way of ensuring that first things come first—which is, after all, the purpose of creative, as distinct from restrictive, planning.

The problem of the relative height of buildings is only one of many that cannot be solved unless building schemes are co-ordinated by being made to conform to a plan conceived—unlike the statutory development plans—in three dimensions. Other problems of which the same can be said include those arising from the concentration of huge office populations in small areas (such as traffic and car-parking problems), those concerned with working conditions (such as standards of daylighting and the provision of open spaces) and those concerned with the degree of respect that a modern city should pay to its ancient buildings.

In this article I have concentrated on the visual rather than the functional aspects of the new City that will be arising out of the ruins of the old during the next few years. The functional aspects are not to be disregarded, but in the long run both amount to the same thing. A high standard of design and amenity not only makes for good working conditions but adds immeasurably to the prestige and dignity of any city, and the City of London's claim to remain the centre of world finance rests largely on a prestige that short-sighted, self-interested development following a stock commercial pattern must inevitably destroy. A policy of mere infilling is quite unworthy of the City's reputation. The regular meetings which are at last being held, on the initiative of the LCC, between their own planning department, the City planning officer and the City's planning consultants, to co-ordinate planning proposals with the help of diagrammatic models of successive areas, represent progress in the right direction, if only for a short distance, and they will serve the additional purpose of simplifying administrative procedure by preventing repeated submission and refusal of unsuitable projects and enabling the authorities to give developers and their architects some idea of what kind of design would be acceptable. But far more drastic measures than this are needed: fresh thought and vigorous action of a heroic kind, not only on the part of the City Corporation and the LCC, but on the part of the various Ministries concerned with rebuilding, of the Government itself, of property owners and of the architectural profession; all must combine resolutely and without delay if the reforms for which this article is a plea are not to come too late.

I describe the measures required as heroic, because they involve both thought and action of the boldest possible kind, something quite different from the cautious nibbling at problems, the carelessness about visual values and the tendency to shelve difficulties in the hope that they will solve themselves, which have characterized the rebuilding of the City since the war. These weaknesses have been encouraged, though not created, by a spirit of 'what-I-have-I-hold' commercialism, by Government niggardliness about capital investment and by the deplorable example set by the Government-sponsored 'Lessor Scheme,' happily now defunct. They have been prolonged by dilatoriness in several official quarters, notably in the Ministry of Transport and the Post Office, who at this moment are holding up agreement on road-planning, road-widening, etc. Only a combined operation by all the parties enumerated above, carried out with the drive and imagination that was put into combined military operations ten years ago, will make the most of the present opportunity—one that will never recur—of giving the City a totally new character; not simply a clumsy imitation of its pre-war character, which had already become obsolete. A style and character inspired by new needs and techniques is the only one that can claim to be the legitimate successor of the style and character that gave the City the unique reputation it thrived upon for centuries.

We can safely assume that the City Fathers are actuated by high motives, but even if this were not so—if they were actuated only by selfishness—the plea made herewith for more constructive planning, for the better co-ordination of building projects and for a more discriminating standard of architecture in the City of London would not be weakened. If their aim, in demanding more and larger building licences, is simply to expedite business, it is all the more necessary for them to co-ordinate their building plans, to think in three dimensions and to persuade building owners to do the same, boldly and imaginatively. There need be no clash of interests. Developers of building sites may be commercial rivals, but when it comes to choosing between a City of well designed, well co-ordinated buildings and a mere conglomeration of unrelated structures, each destroying instead of enhancing the effect of its neighbour, their interests are wholly identical.

ANIMADVERSIONS

JERRY SNEAK

emolument

LOST,

PIED

BY SERGIO BERNARDES

G

R

G

ENIGMA

G e

BIER

T OF COLLEGES AND HALLS,

ED ANCIENT EDIFICES

IRELAND SCOTLAND AND WALES

THE OLD MASTERS OF THE SPANISH

AND FLEMISH SCHOOLS

Nicolete Gray

EGYPTIANS

THEIR CHARACTER AND SUITABILITY TO CONTEMPORARY ARCHITECTURE

Undoubtedly, the Egyptian is the best architectural letter that has so far been invented. And, indeed, it was probably invented as an architectural letter. J. Callingham, the author of one of the first signwriters' manuals, writing in 1871, mentions it as originated by signwriters at the end of the eighteenth century, and later copied by typographers. (The first Egyptian in any typefounders' book appears in 1815.) Whittock, however, in 'the Decorative Painters' and Glaziers' guide' 1827, writes of sign painters imitating 'the projecting letters of wood or metal which have of late become so fashionable'. (Presumably, letters like 4, 7, 8, 12; one sees a good many of such letters about our streets.) The interesting point is that the Egyptian appears from this to have been invented as a three-dimensional letter. Whittock remarks that even the signpainters' imitations were shaded letters, simulating relief. It is not a letter naturally drawn or carved but one constructed, cast, or painted, and unlike any other letter its architectural is far richer than its typographical tradition. As one goes through the streets of England, one becomes aware that of the small total of distinguished lettering surviving, a remarkably high proportion is Egyptian.

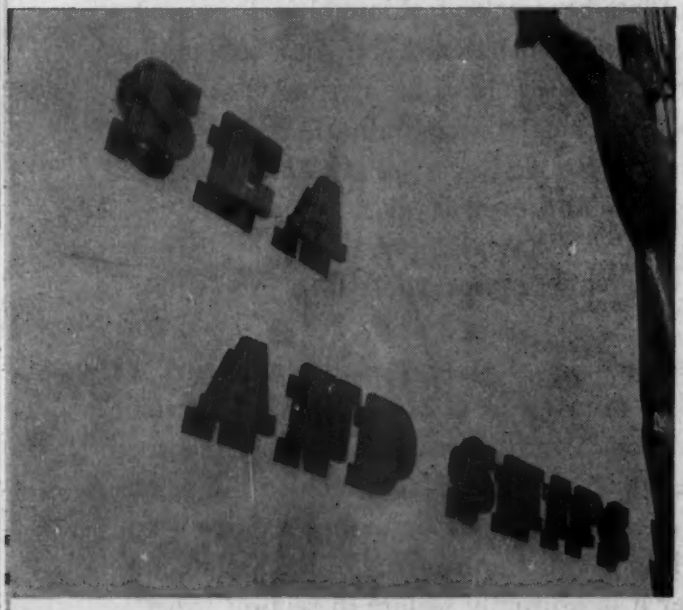
The definition of an Egyptian is that it is a letter with unbracketed, slab serifs. It is normally, but not necessarily, an even-line letter, in virtue of both these characteristics also a heavy letter. In this it has a definite advantage over the classical letter. The sensitive gradation between the thick and thin stroke which contributes so much to the beauty, elegance, and harmony, of classical lettering detracts from its weight and body, qualities essential to large scale letters. A fourth very important characteristic of the architectural Egyptian is that as a three-dimensional letter it is normally square in section, whether

incised or in relief; again in contrast to the V-section of the classical, and therefore of a different nature as an architectural element, casting a different sort of shadow. It is thus made up of patterns of flat strips, mostly vertical and horizontal, variegated by regular curves; in fact, it is of the same physical terms as the ordinary features of post-Gothic domestic buildings—corners, moulding, window surrounds, etc. It can, therefore, easily be planned as an integrated and enlivening element in an elevation. So much, of course, could also be said for heavy Victorian sanserif, which is also square in section, and, indeed, is at its best when used in such a way,* but the Egyptian has great advantages over it. Its slab serifs give the design finish, stability and balance. Moreover, they eliminate the embarrassing purely geometrical terms of sanserif. The Egyptian is a formed, sophisticated letter design. Finally, it gains immensely in rhythm and variety through the occasional incidents of shading in certain letters which are a definite, if variable, feature in the Victorian design.

1, ineffective modern use of Egyptian on a chain store at Bath. By treating it as a light letter (following modern typography) its character and effectiveness are lost.

The examples which we illustrate show the great variety of the Egyptian in use, mood, material nature, and design. I want to examine the elements which seem to underlie its successful use. To take first the *three-dimensional* Egyptian, which I would like to consider as the normal form of the letter—for architects surely it is essential to get away from this idea of a disembodied, black and white affair. Its correspondence with nineteenth century architecture seems to me obvious, that with twentieth century terms is still in the making. The Victorians produced a sophistication in their relief, painted, metal letters of exaggerated perspective, 7; the section is irregularly splayed, so that, seen from below, the effect is richer and less rigid than with regular square-section relief (compare with 5). The modern architect has invented a new extension by introducing a flat letter fixed some distance from its background, either casting a shadow, or lit from behind, 2. The *shadow*, of course, is part of the letter design. One sees that in the whole tradition of shaded letters, which will be dealt with in a later article. Here it may again be noted how important the slab serif is, how, in general, the Egyptian is a more effective shaded letter than sans.

2, a modern use of shadow on the Sea and Ships Pavilion at the 1951 South Bank exhibition. Too restless perhaps to be altogether successful.



The slab serif, however, demands particular care in *spacing*. It is wide and heavy, and normally demands wide spacing. But because of their weight Egyptians can make a substantial and effective ornament to an elevation, if they are placed and spaced with that intention, 4 and 5. Spacing, too, affects the *mood* conveyed by the lettering. It has surprising variety. One thinks of Egyptians as rather dour—

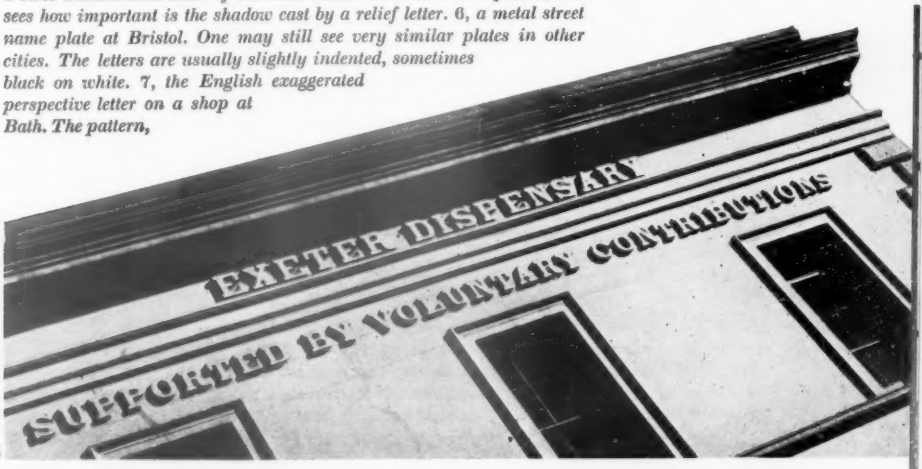
* AR April 1954 pp. 269–271

[continued on page 391

3

4

3, a classic example both in formal letter design—note the effectiveness of the abbreviated St.—and in placing and relation to the architectural features. Here lettering is used as an enriching factor in a design in plane surfaces. Just off Trafalgar Square, it was presumably designed by Smirke with the rest of the street front. Here, at Downham Market, Norfolk, 4, the lettering is the only feature of a completely unpretentious elevation, but how felicitous it is. 5, the Egyptian as a square section, a three-dimensional letter of the same nature as dentils and quoins, one sees how important is the shadow cast by a relief letter. 6, a metal street name plate at Bristol. One may still see very similar plates in other cities. The letters are usually slightly indented, sometimes black on white. 7, the English exaggerated perspective letter on a shop at Bath. The pattern,



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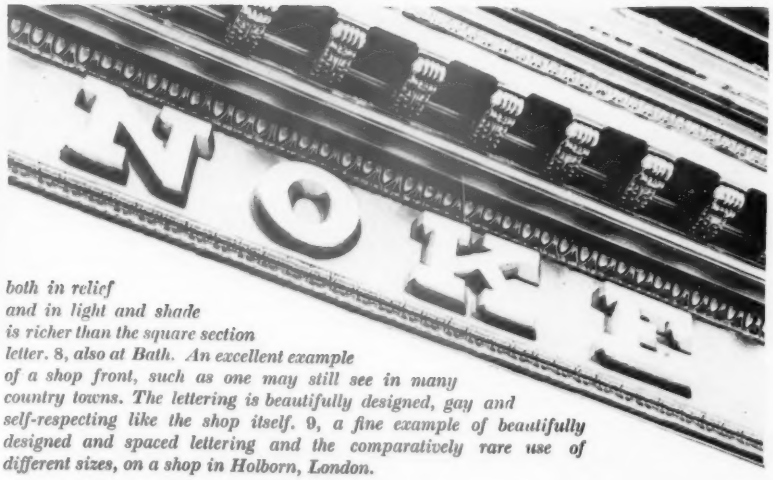


7

both in relief and in light and shade is richer than the square section letter. 8, also at Bath. An excellent example of a shop front, such as one may still see in many country towns. The lettering is beautifully designed, gay and self-respecting like the shop itself. 9, a fine example of beautifully designed and spaced lettering and the comparatively rare use of different sizes, on a shop in Holborn, London.

8

9

14

10, *L. Gouverneur, Quai de l'horloge, Paris; a French Egyptian, slightly compressed, not strictly even-line, an applied wood or metal letter with exaggerated perspective like* 7. *A type that must have been very common in nineteenth century France.*

11, *an Irish painter's shaded letter. The intention of the sign-painter was perhaps happier than the lettering which was his model. The N is too narrow, the S too square, the serifs too heavy for the spacing, and yet it has a boldness that combines very attractively with the fine modesty of the shuttered shop front.*

12, *a nineteenth century example at Staithes, Yorkshire. Like* 14 *and* 16 *remarkable for its departure from even-line orthodoxy. But here a completely different effect is produced, impressive and puritan, by its difference in purpose and architectural setting combined with the comparative thinness of the horizontal.*

13, *standard letters in imitation marble at Needham Market, Norfolk. This type of letter seems to have been mass-produced at one time, and may be found all over England, though most often in the west country.*

14-18, *the exploitation of Egyptians in modern architecture.* 14, *on a shop window in Albemarle Street, London, with relief letters in a vertical panel to the right. Compare with* 16, *at the* 1951 *South Bank exhibition. The design of the* T *which occurs in one and not the other alters the character of the lettering.* 16 *is a letter in itself squat, more expanded than expansive, but capable of being made up into an interesting design.* 20, *on the facing page is a nineteenth century version of the same mood.* 15, *a relief, italic Egyptian at East Kilbride new town, Ayrshire.* 17, *another South Bank example. The square spacing and brickwork background is a pleasing contrast to the italic diagonal.* 18, *again at the South Bank, a really forceful piece of abstract decoration. The letters were about five feet high.*

15

16

17

18

perhaps because of the name. And, indeed, their great interest is in the grand contrast of heavy vertical with heavy horizontal, full of possibilities for monumental design. But they can also be enchantingly gay and neat, 8, depending on felicitous spacing and harmonious individual letter design, or they can fit into a flowery as well as an austere ensemble, 20. One may note how in 13 the expansive mood is conveyed by a wide-spaced slightly expanded letter.

Finally, we come to the subtlest modifications—those of *letter design*—though that can never, of course, be properly considered apart from both section and spacing. The most interesting, to my mind, are those refining the even line in certain letters, in S and G where the curve meets the serif, and sometimes on the otherwise very heavy letters M, A, K and W. One notices too how the character of certain letters can set the mood of the whole inscription. S plump and neat or bulbous, or with a slight squaring of the curves which seems to reduce it to something arid and prosaic; or R with its leg straight and stilted, or restrained by a serif ending, or gaily curled. One might note, too, the fine nineteenth century G, wide and generous with short, often spurred, lower limb, and the E with short unserifed middle arm, 19.

19 and 20, both at Richmond: fine examples in, 19, of spacing and the effective use of a really heavy letter, and in 20, of modest and suitable gaiety.

And then, of course, there is lettering treated purely as *pattern*. Egyptians again, because of their weight, are wonderful material. And in so far as they are treated in this way the design of individual letters can, it seems to me, be modified almost indefinitely—as Gothic letters so used have been—for the letter form in such a case is only a starting point, 18.

21, the Egyptian as a triangular section letter. An amusing and clever compromise of about 1860 in Bloomsbury Square, London; an attempt to reconcile the letter of the period with the Corinthian order.

return of the quadrangle The two schools illustrated here are the first of several of a new type with which Middlesex County Council is now experimenting. A number of Secondary Schools in the county had been started under the original 1945 Building Regulations, and by the time the amended 1951 Regulations had been issued quite a large programme was under way. Two main points were emerging from these designs: their high cost and the large amount of ground they occupied. Middlesex being an urban area sites were already becoming difficult, and although these schools contained two or three storied teaching blocks, they were occupying too much space.

Early in 1950, therefore, and in anticipation of a reduced cost per place for the 1950-51 Programme being issued by the Ministry of Education (not to exceed £290), it was decided to experiment with a new type of plan. In broad terms, this consisted of placing as much as possible of the teaching accommodation in one block, and at the same time to keep the school on two working levels. The object was to reduce the area of circulation space, but at the same time provide for quicker and easier movement of classes in changing over to different parts of the school. Classrooms and special instruction rooms were already being interrelated and designed in separate suites, an arrangement of particular importance to schools with an extended type of plan. Where specialized activity groups are separated physically by staircase access, there is a tendency for bottlenecks and for inflexibility in the use of teaching space. Compactness, combined with openness of plan, to assist freer circulation and supervision, seemed to offer both educational and cost advantage. The omission in the schedule of a second gymnasium and a separate room for dining led to the dual use of the assembly hall and dining space, etc., and out of this developed the idea of the big spaces becoming the central hub of the school (see frontispiece, page 366, illustrating the quad at Denis Clarke Hall's School, at Hounslow).

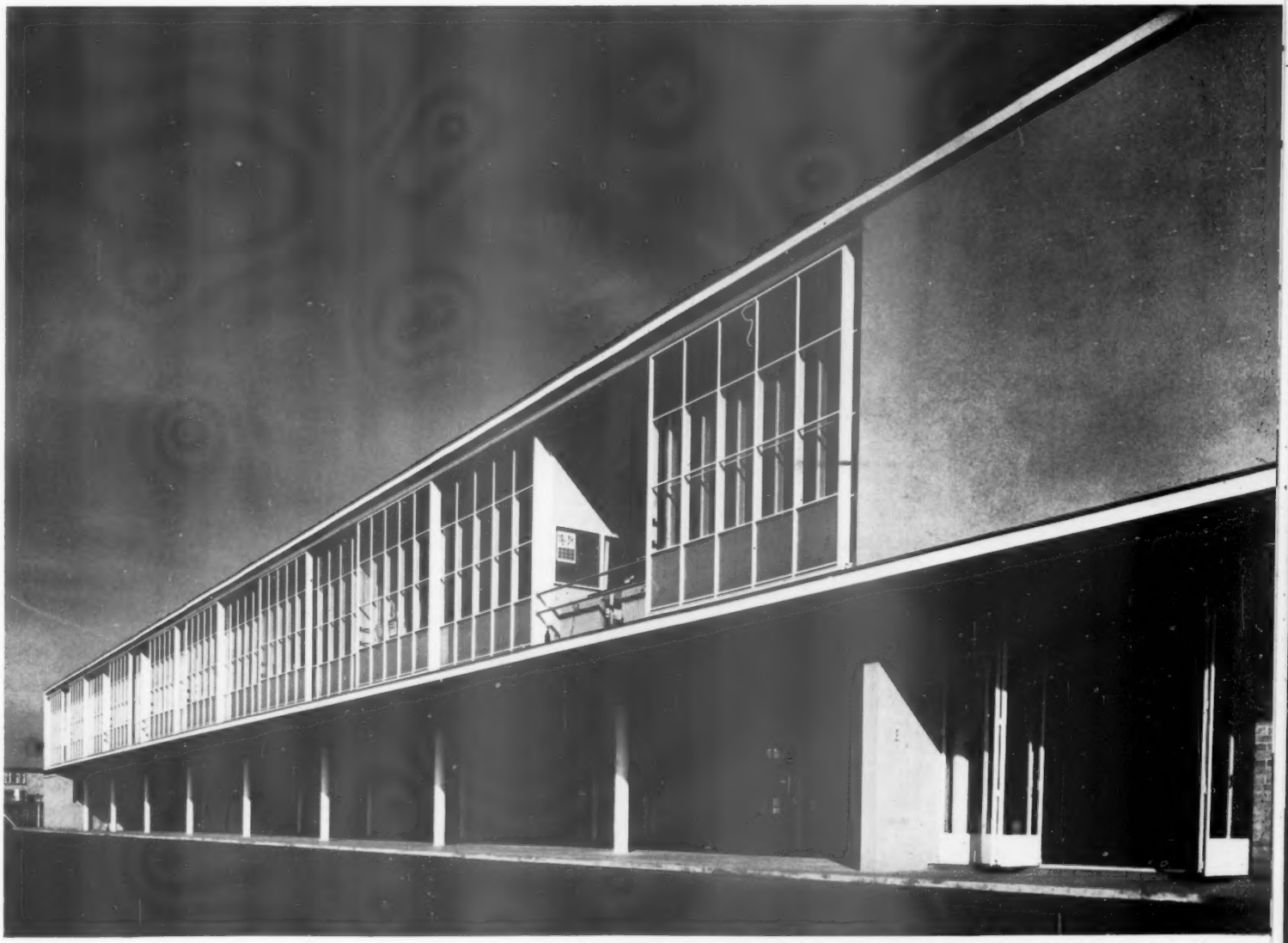
It was decided to economize structurally by applying these principles in the simplest and most direct form. As far as practicable, the teaching rooms were to be kept on one level raised above the ground for better lighting and carried on a broad platform supported by columns at widely spaced intervals. By reducing the number of loading points economy in foundation work could be effected, and the general contraction of the plan would save on pipe runs and ducts, drainage and site works generally.

The architects concerned were given this broad conception, and each one was left free to work out his own particular solution, according to the site and other conditions arising. Both schools were briefed in March, 1950, and the foundation contracts started towards the end of the same year. Two other schools, still under construction (at Hornsey by Richard Sheppard and Partners, and at Hendon by the County Architect's Department), provide variants of the same theme.

C. G. Stillman, Middlesex County Architect

SCHOOL AT HOUNSLOW

ARCHITECT | **DENIS CLARKE HALL in association with C. G. Stillman, Middlesex County Architect**



1. general view of the west elevation from the playground showing one of the first floor classroom sliding windows open.

This secondary modern school for the Middlesex County Council provides accommodation for 540 pupils. The site which lies between the Great West and South-West Roads is level with access to the east.

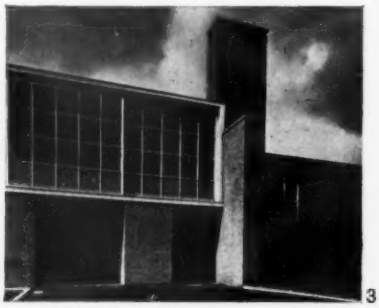
The planning of all the teaching areas is based on a first floor slab around a central assembly hall, crush hall and gymnasium. Beneath this first floor slab are planned all the subsidiary rooms and one general purpose room. The crush hall is little more than an open space with glazed roof and walls. The first floor plan has been divided into five areas each with lockers and cloaks. This provision has been included to allow for the division of the school into 'houses' of pupils of mixed ages and intelligence. The lavatories are in small groups distributed throughout the building. The workshops are planned on the ground floor to the north, outside the main slab perimeter, and are acoustically insulated from the rest of the building by a deep cavity brick wall.

An analysis of this type of plan in comparison with an open planned secondary modern school for a similar number of pupils at the time when it was planned shows the following savings:—

	SAVING
circulation area	24%
circulation distances (for the head teacher to visit each room and return to his own room)	30%
perimeter of external walls	57.5%
length of soil drainage	53.3%
run of main heating pipes	60%
run of electrical sub-mains	50%
floor ducts	100%
total site occupied by building ...	78%

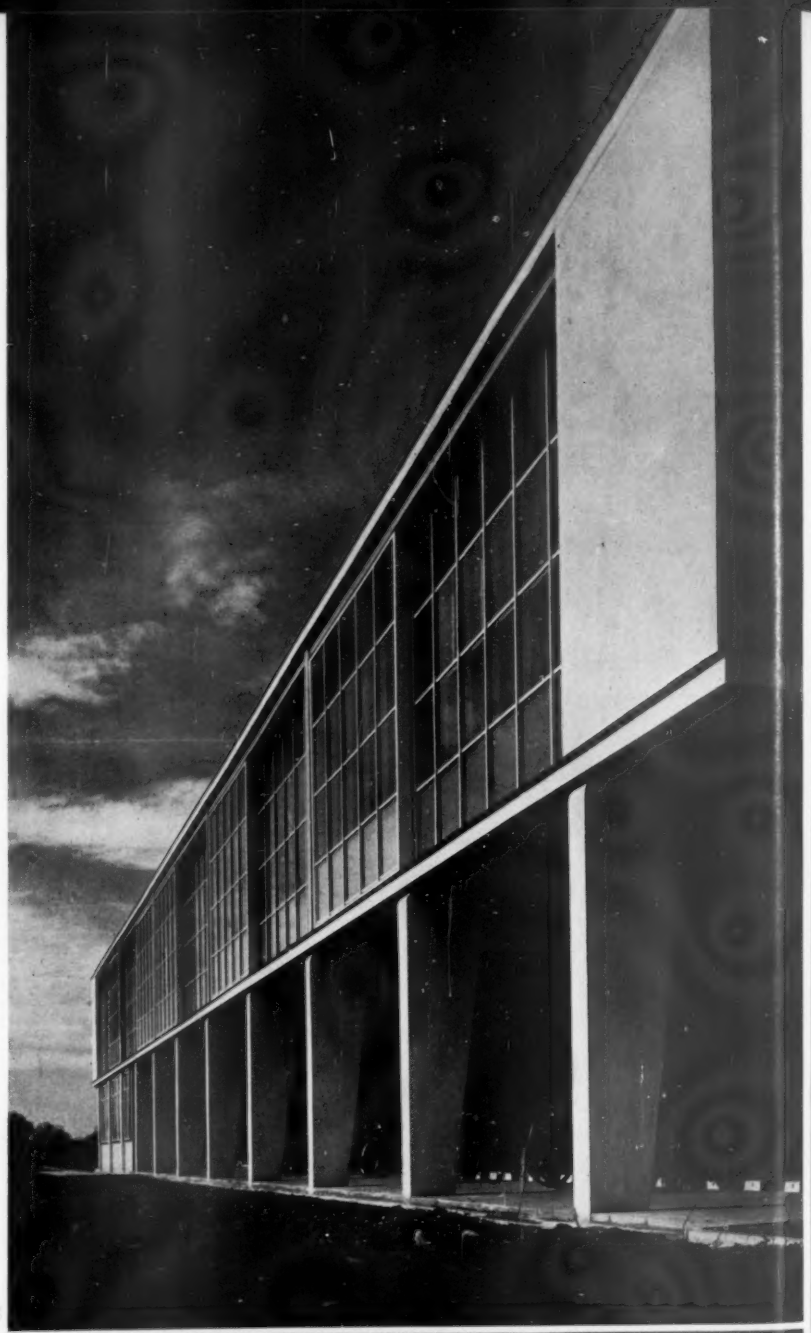
The whole of the structure up to the first floor slab is in reinforced concrete with independent footings, to three types of columns, based on a 25-foot by 14-foot module. These columns carry a grid of beams supporting the whole of the first floor. The first floor structure is of light welded steel framing. The brick walls to the gymnasium and assembly hall are built on independent footings and form a sound barrier to the rest of the school. The roof is constructed of aluminium decking with three-ply felt finish.

The building is heated by a low-pressure hot-water system and radiators, and is ventilated with a mechanical extract system. For summer use, the glazed panels on the first floor are made to slide so that half the window area can be opened. All service pipes, etc., are suspended from the first floor slab.



3

External rendering and concrete is painted with pale grey, pale pink, white or blue-grey stone paint. Facing bricks are hand-made red sand facings. The stone wall by the main entrance is of Broughton Moor Westmorland green slate and external paving is blue York stone. Cladding to the caretaker's flat is tongued and grooved hardwood boarding. Internal walls are plastered and painted with emulsion paint.



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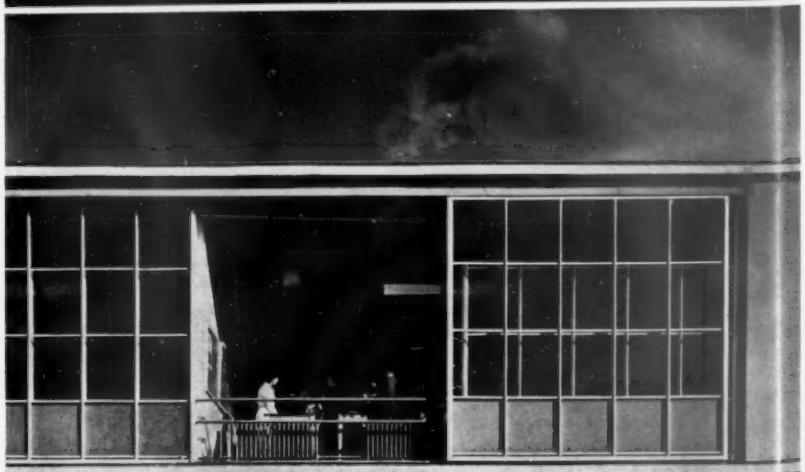

4

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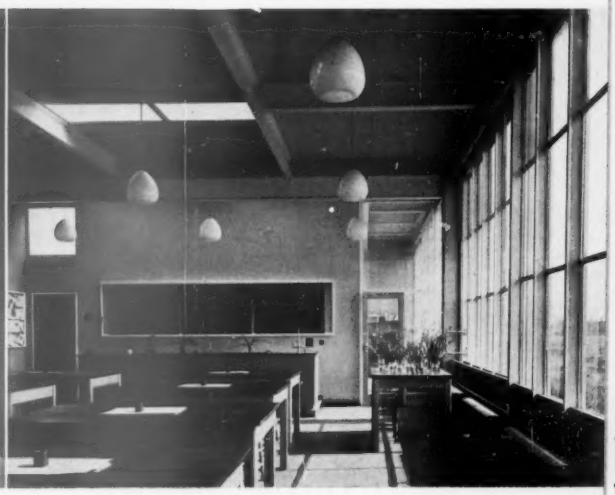
2, on the facing page, the south elevation with the covered area used as a cycle park. 3, detail of the main entrance. 4, a typical first floor classroom with its sliding window open. 5 and 6, views of the central crush hall, which is, in fact, a covered-over quad (see also the frontispiece, page 366). The main covered area on the west side is seen through the window wall. The floor is surfaced with



7
8

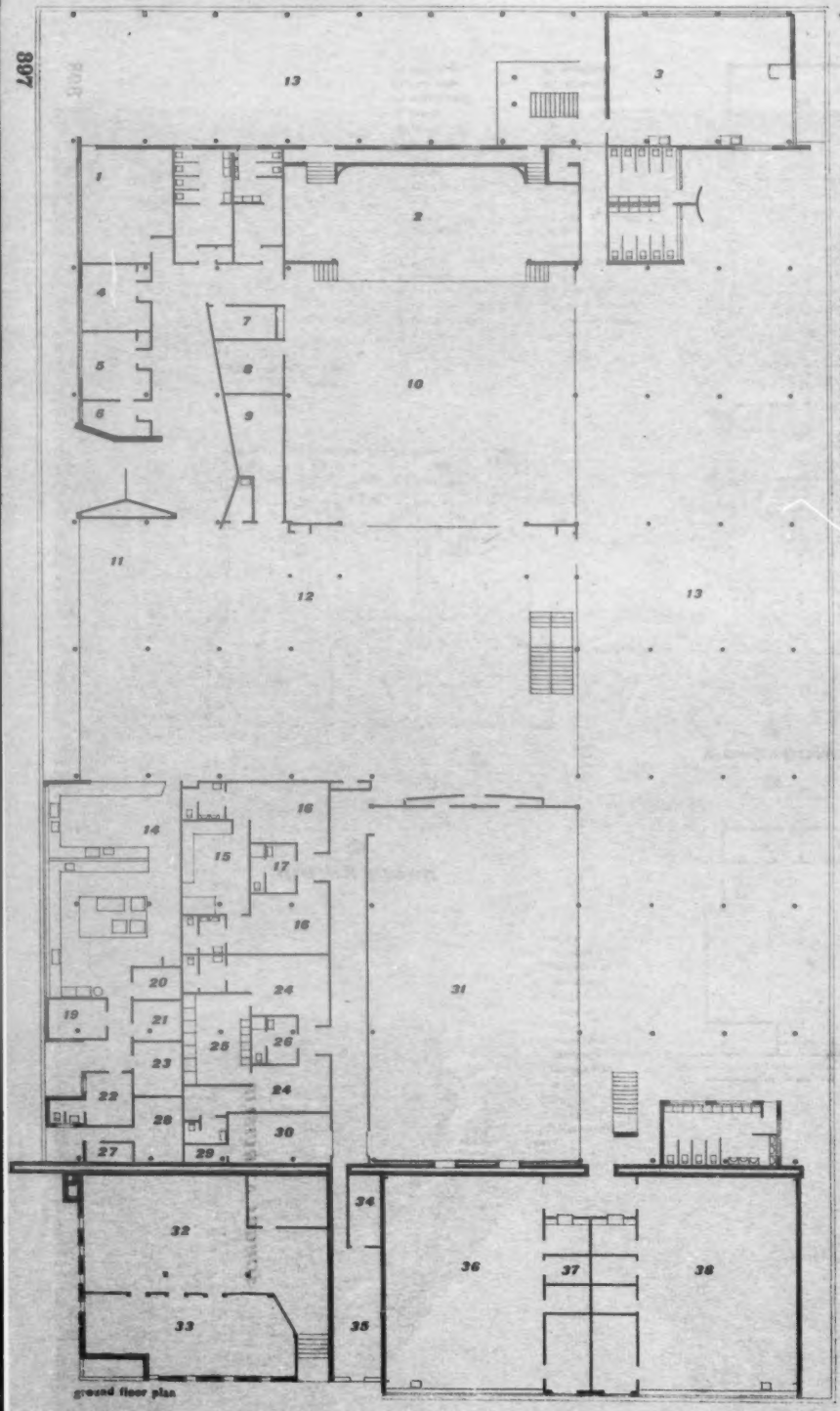
concrete tiles in squares of yellow and blue. The chequered panels of timber veneer and the doors to their right are removable. 7, detail of a typical changing room. 8, the biology laboratory with the greenhouse beyond. The windows face south. 9, the assembly hall and stage. Proscenium curtains have been drawn and disappear completely into the wing space. 10, one of the art and craft rooms.

9
10

11

11, west and south elevations. The main staircase in the central crush hall can be seen through the covered area. 12, the front elevation with the caretaker's flat on the right.

12



ground floor plan

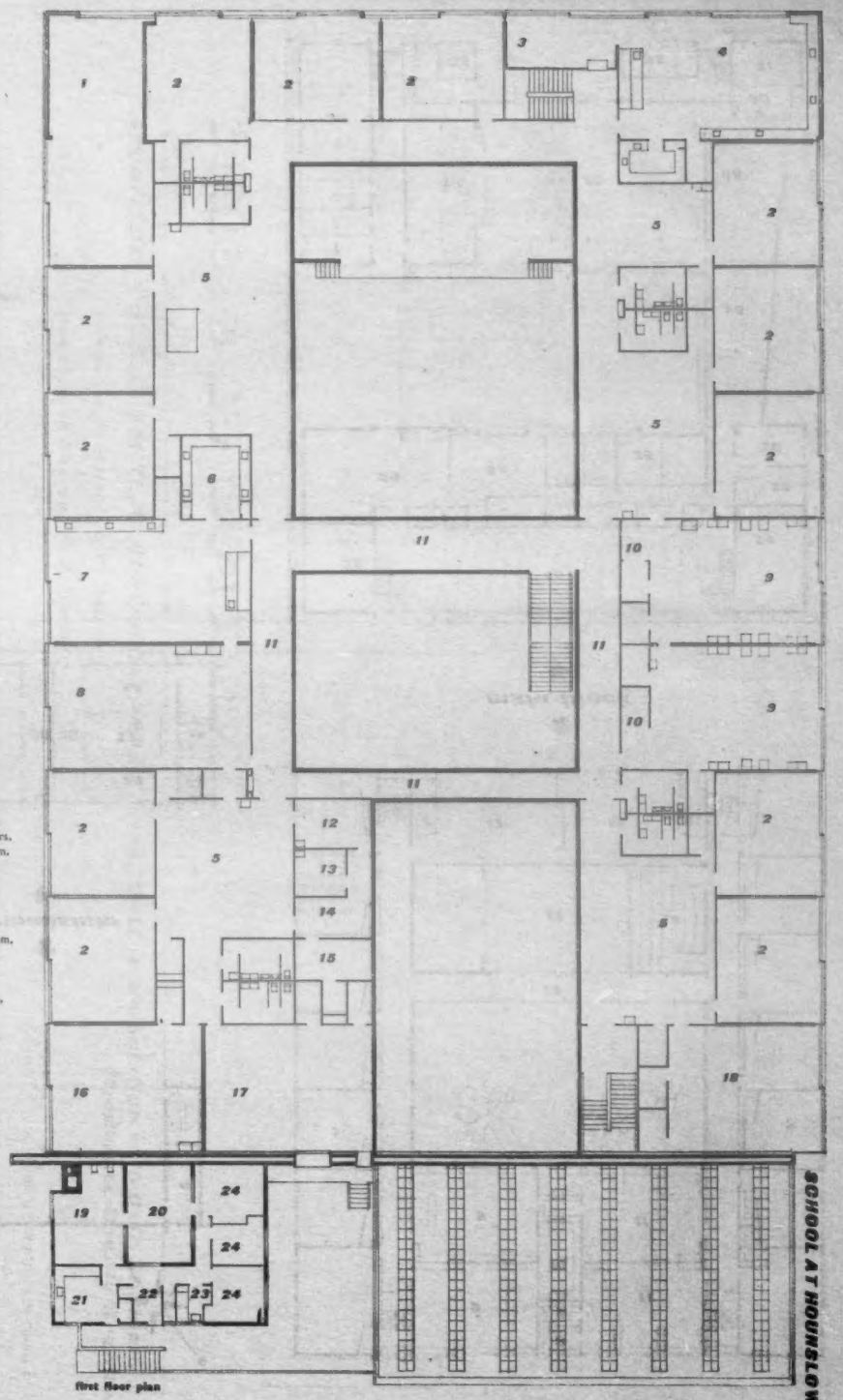
key

1, staff room.
2, stage.
3, craft room.
4, senior mistress.
5, headmaster.
6, secretary.
7, stock room.
8, chair store.
9, table store.
10, assembly hall.
11, dining hall.
12, entrance hall.
13, covered areas.
14, kitchen.
15, boys' shower room.
16, boys' changing room.
17, instructor.
19, vegetable store.
20, office.
21, larder.
22, staff.
23, dry store.
24, girls' changing room.
25, girls' shower room.
26, instructress.
27, batteries.
28, switch room.
29, gas meters.
30, gym store.
31, gymnasium.
32, boiler room.
33, fuel store.
34, games store.
35, games entrance.
36, woodwork shop.
37, stores.
38, metalwork shop.

key

1, library.
2, class rooms.
3, greenhouse.
4, biology.
5, cloaks and lockers.
6, preparation room.
7, science lab.
8, art.
9, housecraft.
10, dinette.
11, balconies.
12, examination room.
13, medical officer.
14, waiting room.
15, rest room.
16, geography room.
17, music room.
18, needlework.
19, living room.
20, court.
21, kitchen.
22, hall.
23, bathroom.
24, bedrooms.

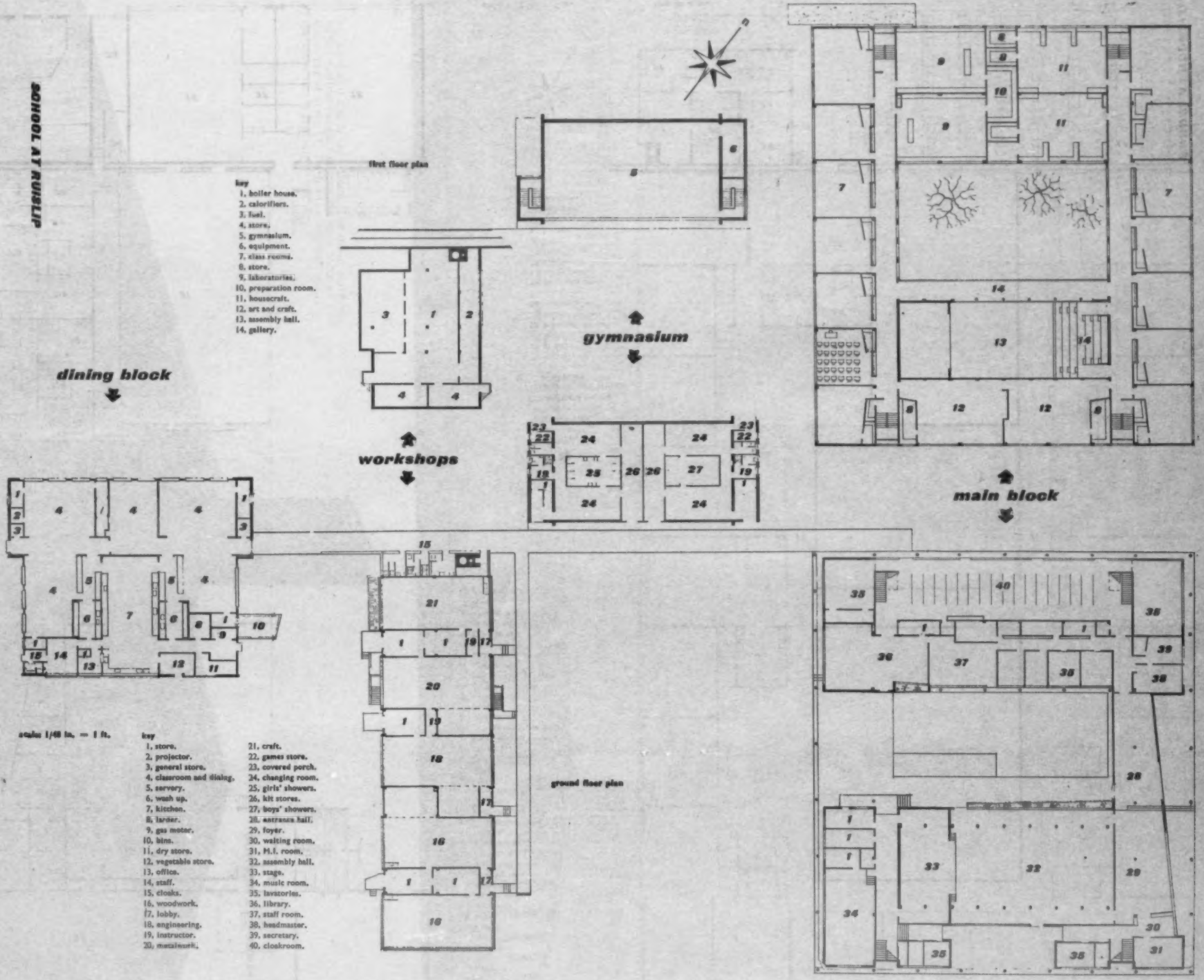
scale: 1/32 in. = 1 ft.



first floor plan

SCHOOL AT HOUNSLOW

SCHOOL AT RUISLIP



SCHOOL AT RUISLIP

ARCHITECTS | ***F. R. S. YORKE, E. ROSENBERG AND C. S. MARDALL in association with C. G. Stillman, Middlesex County Architect***

Associate Architect: I. B. Wilson

Assistant in Charge: H. J. Gordon

1. the east elevation of the main classroom block.

2

3

4

5

2, on the facing page, the south elevation of the main block. Above the covered play area are the two art and craft rooms. 3, view of the gymnasium from another covered play area on the west side of the main block. In distance on the left are the water tower and boiler chimney and part of the workshop block. 4, the workshop block looking east. 5, the quadrangle contained by the main teaching block. 6, the north elevation of the main block showing the start of the concrete path and canopy which links all blocks. 7, view from the gymnasium of the main classroom block.

SCHOOL AT RUISLIP

6

7

Two important factors governed the planning and structure of this four-form entry mixed secondary school. First, that the site is adjacent to Northolt Aerodrome and the sound from aircraft necessitated double glazing to all windows and roof lights and a simple system of air conditioning was introduced. Second, that the waterlogged clay soil made a widely spaced structural grid economical. A compact plan of simple outline with double banking of classrooms and special rooms with a resultant reduction in circulation space was planned to offset additional costs due to the difficult site conditions.

Every classroom has an outside window wall, but additional top lighting has provided a very high daylight factor with an exceptionally even light distribution. Cross ventilation to teaching rooms became unnecessary, because of the system of air conditioning. No attempt was made to place all sections of the school under one roof, partly because of the size of the school and partly because some portions, such as the boiler-house, kitchen and dining block, may eventually be shared if the school becomes a boys' school with an adjacent girls' school attached.

The main block has a reinforced concrete frame and ribbed concrete floors and roof, generally on a 23-foot 4-inch square grid. External walls to first floor are cedar boarding on a tubular metal frame with an inner skin of compressed straw slabs. Timber windows are double glazed and centrally pivoted. The ground floor walls externally are in stock brick and Hornton stone. Internal partitions between classrooms are 4½-inch brick, other partitions being hollow pot or clinker blocks. The workshop block has shell concrete roofs insulated with fibre board and felt externally and sprayed vermiculite internally. Steel windows are single glaze. Construction

8, general view of the school approach and main classroom block. 9, south elevation of the caretaker's cottage. 10, the assembly hall from the stage. 11, view from the assembly hall gallery looking towards the stage. 12, the entrance hall and foyer showing the glazed wall tiling designed by Peggy Angus. 13, a typical specialist classroom.

8

9

SCHOOL AT RUISLIP

of the gymnasium block is of broad flange stanchions with exposed lattice beams, a reinforced concrete floor, with a timber joist and straw slab roof, finished with three-ply bitumen. The dining block has a reinforced concrete framework and roof with double glazed timber windows. Wood block floors are used throughout in all teaching rooms, Hornton stone to the entrance hall, concrete tile to coatroom and lavatories, and thermoplastic tiles to corridors.

Walls are generally in two-coat cement render with a wood float finish and either one or two coats of flat paint. Stairs and lavatories are finished in gloss paint. The fibre board ceilings are finished with one coat of paint. A pattern of glazed wall tiling in the entrance foyer has been designed by Peggy Angus.

Hot water radiators are the main source of heat to teaching rooms, but in addition warmed air is blown in over the suspended ceiling to the corridors into all teaching rooms. This system makes it possible to keep the windows closed during periods of heavy air traffic.

10

11

12

13

Reyner Banham

OBJECT LESSON

On that imaginary monument which appropriately covers the remains and resting place of English Surrealism there must surely appear the epitaphic boast *We Observed the True Status of Objects in the Landscape*. It was the unique achievement of the English branch to have discovered that the surrealist object could have a more subtle relationship to its setting than to be the *Sacré Coeur* reflected in a tray of glass eyes. Paul Nash early observed that a high degree of surrealism emanated from the customary clutter of the English street and that a lamp-post clearly marked 'Parish of St. George, Hanover Square' when inexplicably translated to the sea-front at Swanage was in a state of surrealism comparable to the standard definition—a statue in a ploughed field.* But the eye and imagination of Paul Nash could dig deeper and reveal states of incongruity between objects and landscapes which were of a craftier and less ephemeral order.

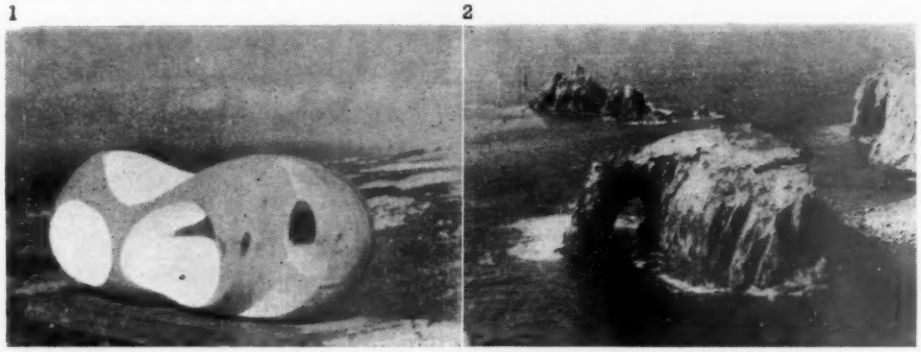
Thus, in his celebrated *Equivalents for the Megaliths*, the canonical solids of post-impressionist art—cylinder, sphere, cone, etc.—are set down in a landscape normally inhabited by solids of an older dispensation, for the setting is clearly that of the West Kennett avenue of standing stones at Avebury. In making this substitution the artist was able to reaffirm the importance of degrees of incongruity, and to reveal thereby the essential incongruity of man. For the grey-weathered megaliths of the avenue are already so worked upon and compromised by the effects of Nature that incongruity resides only in their remaining upright and in ranks—as soon as they keel over they become mere rocks and are fully assimilated to their undifferentiated setting. But

* AR, May and September 1936.

replace them with the geometrical solids of Paul Nash, neat and clean as machine products, and one has at once a heightened sense of the essential incongruity of Man, the intruder in the landscape, whose pleasure and compulsion is, as Le Corbusier once accidentally defined it, to *faire de la géometrie sous les arbres.* Geometry may be regarded as the key to Nature, but it is a man-made key, and its terrestrial existence reveals the presence of Man as surely as the footprint on the shore of Crusoe's Island. And its relative purity is a sign of his recent presence.

Paul Nash made only passing reference to this subject in a long campaign of object evaluation, in which more time was devoted, with proper Englishry, to the incongruity of the Nature object in a man-made setting, the tree-root in the art gallery, and the worn pebble on the mantelpiece. But these latter are only pathetic exiles, robin redbreasts in aesthetic cages, whereas the man-made object in the landscape is a pioneer outpost, a gesture of defiance in the face of that universal entropy from which human culture has been painfully won. Since his time the subject has remained open but uninvestigated, though it was a sufficiently commonplace war-time experience to see this relationship between ships and the empty wastes of sea, between aircraft and the undifferentiated acres of an aerodrome. But now the aesthetic aspect of the problem has been reopened by a new film of Barbara Hepworth's sculpture in its Cornish landscape setting.* Here one sees forcefully demonstrated the greater persuasiveness of the new-made object, and the difference between any man-made object and any natural one. One sees how much more affective upon human emotion is the perforated sculpture than the perforated rock, and the relative degree to which these affective emotions are stirred by the perforated sculpture, clean, new made, hand made, and the perforated megalith or dolmen, old, tempest-bitten and never so pure in form as the sculpture.

1 2



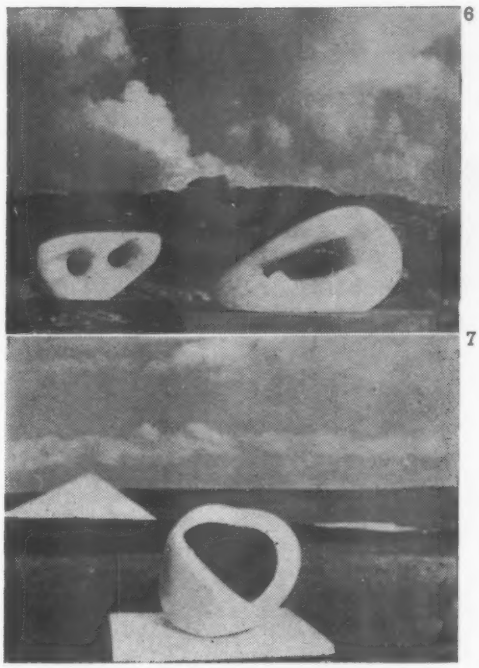
Whatever their formal similarities, the hand-made perforated sculpture, 1, *and the nature-perforated rock,* 2, *do not play upon our human emotions in the same way—the new-made object,* 3, *affects us more immediately than man-worked stones,* 4 *and* 5, *which, under the action of wind and weather, have become compromised by natural forces.*

The introduction of these affective and highly emotive objects into the landscape alters values all round. The object itself becomes far more provocative than it would be in a man-made setting, while the relative values of all the other objects in the landscape are resolved and altered. Correspondences are established, not only between one

* *Figures in a Landscape,* directed by Dudley Shaw Ashton for the British Film Institute.

3 4 5

sculpture and another, but between the sculpture and other man-made objects, such as the gleaming cones of china-clay spoil-tips—artefact signals to artefact across the intervening waste of Nature. Or in a scene where human significance was previously focused by the wave-battered timbers of a groyne, the introduction of the uncorroded geometry of the sculptured object dismisses anything which has been compromised by the action of natural forces to a secondary plane of interest. 'Time claims them for the landscape' as the film commentary says.



6 7

The lessons which these objects have to teach us have, presumably, been known to every great designer who ever put an object into a landscape with conspicuous success—whether that object was a Pyramid, or the Eiffel Tower, or S. M. della Consolazione at Todi. But the film brings us down to the level of a basic primer, since it offers three different kinds of abstract objects only—new, time-worn, and natural—in various kinds of abstract landscapes. These lessons must be conned and comprehended before one is really fitted to put more complex objects, such as water-towers or office-blocks, into man-compromised landscapes

When it is brought into the landscape, the man-made object at once asserts its kinship with other artefacts, whether aesthetic, 6, *or industrial (china clay tips),* 7,*—where human attention had once been claimed by existing, but time-worn artefacts,* 8, *the new-made object,* 9, *re-focuses that attention and diminishes the status of the old,* 10.

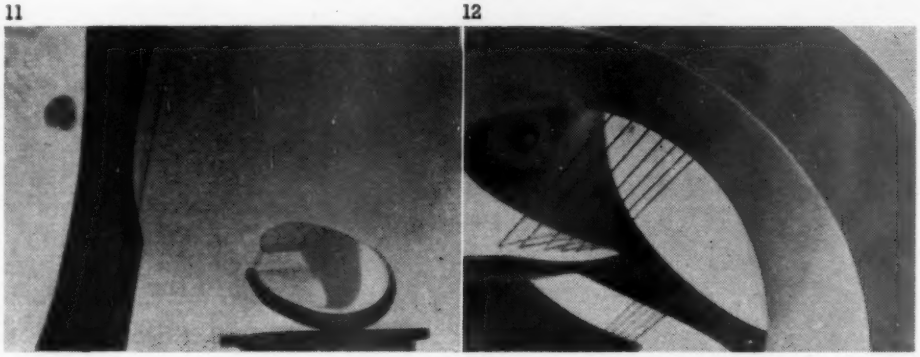
8 9 10

like the heart of Hertfordshire or the area east of St. Paul's. There is a time in the design and siting of any construction when it must be considered as an abstract assembly of volumes in relationship to a landscape or town-scape setting, and in relationship to the possible and obligatory viewpoints from which it may be seen. Here again the film is suggestive with its sequences of penetration (on this month's cover) and of progressive involvement with the interior economy of sculptures, for it reminds us that the key view of any building is that of the man who approaches it with the intention of entering it, and that the moment of truth—in any concept of building other than pure façade-making—is the instant when, with one foot still on the pavement and the other on the doormat, he involves himself in its interior economy.

That one can transfer the experience of sculpture to the large scale experience of architecture in this way, without travestying either art, is a tribute to the essential

coherence of the Modern Movement. It is not a coherence based on the absolute laws of the academies and the Platonic tradition, but a coherence by analogy between relative and related values. As in quantum physics, where the thing observed and the observer himself establish, by their presence, a field of relationships which their presences distort, so in modern art both the absolute object, unrelated to its setting, and the ideal viewpoint, unrelated to human physiology, have been replaced by the object-in-environment/man-in-environment relationship, a kind of field of aesthetic force. And, as in quantum physics one begins with simple models, so must one in modern art, with the abstract object in an abstract landscape.

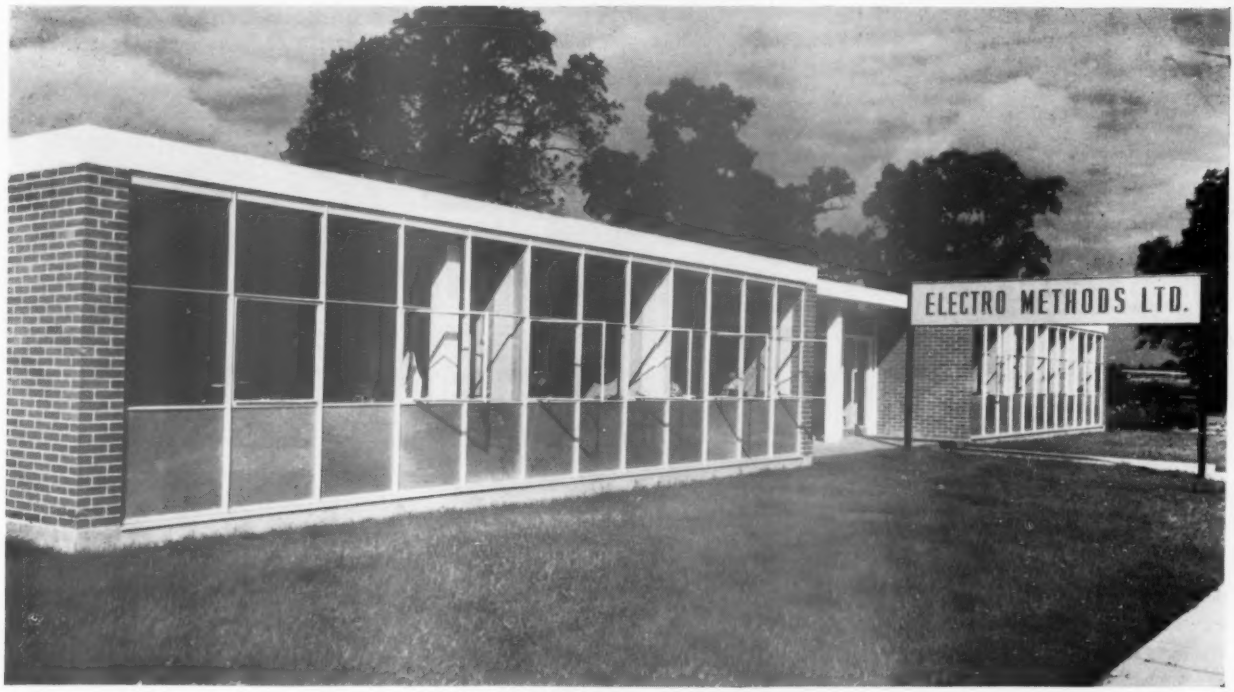
11 12



The moving camera-eye swings through or past, 11, *the sculptured object and penetrates into its structure,* 12, *dragging the attention of the spectator with it, involving him with the workings of the artefact, forcing him to see what he might otherwise be happy to ignore—there is no more persuasive visual educator than the film.*

But these are lessons for trained aesthetes to learn from landscape objects in general; there is a lesson which a wider public could learn from these objects in particular, as they appear in the film. The basic education of the eye remains a problem untouched by English school-teaching, which, by contrast, now makes an excellent job of training mind and hand. Elementary exercises for opening the eye, like those for expanding the chest, must be performed in the right atmosphere—not the atmosphere of the school-room, where most visible objects have been worn down to the level of furniture by constant familiarity. That propitious atmosphere for the exercise of the eye is far more likely, among unsophisticated persons of school age and above, to be generated in front of the cinema or TV screen.

Where a verbal discussion of problems of form—this article for instance—would make no impression, the form itself turning before the camera eye within the magic confines of the screen would come to many viewers under conditions when they were most likely to be attending to what they could see, and were most inclined, visually, to accept it—even though they might later, verbally, go through the motions of rejecting it. The visual memorability of the screen image is becoming proverbial, and if that image was an elementary object-form, tied to other images by the kind of simple, though never naive, comparisons which this film makes, then it could contribute something to the primary education of those who, though they have the gift of sight, are blind to the arts of seeing, and to the environment in which they move.



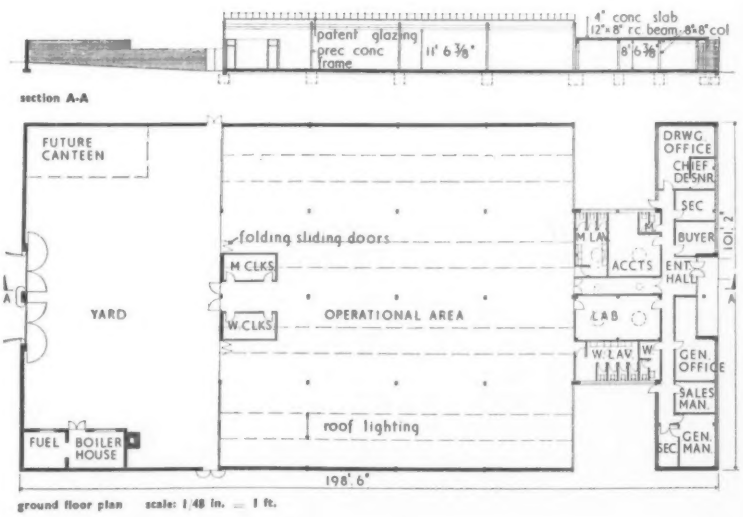
1, the office block from the east. 2, below, the service entrance from the west.

FACTORY AT STEVENAGE NEW TOWN

D. P. REAY: Chief Architect, Stevenage Development Corporation

This is one of two small standard factories which can be divided into units of 10,000 or 5,000 square feet each with its own office and sanitary accommodation. The requirements of the manufacturing process were for a grid of 25 feet, very good lighting, overhead electric trunking and provision for etching glass and paint spraying.

Production area and office block have precast concrete frames, the former on a 25-foot square grid and the latter with a 12-foot 6-inch by 18-foot grid. Over the production areas the frame is pitched at 10 deg. with valley beams and purlins to receive the roofing finishes, and the 8-foot span aluminium roof lighting. The office blocks have roofs of 4-inch in situ concrete slabs poured on 2-inch woodwool as permanent shuttering. Bases are cast in situ with pockets to receive the precast frame and ground beams span between bases to carry 11-inch cavity brick walls or full height glazing.



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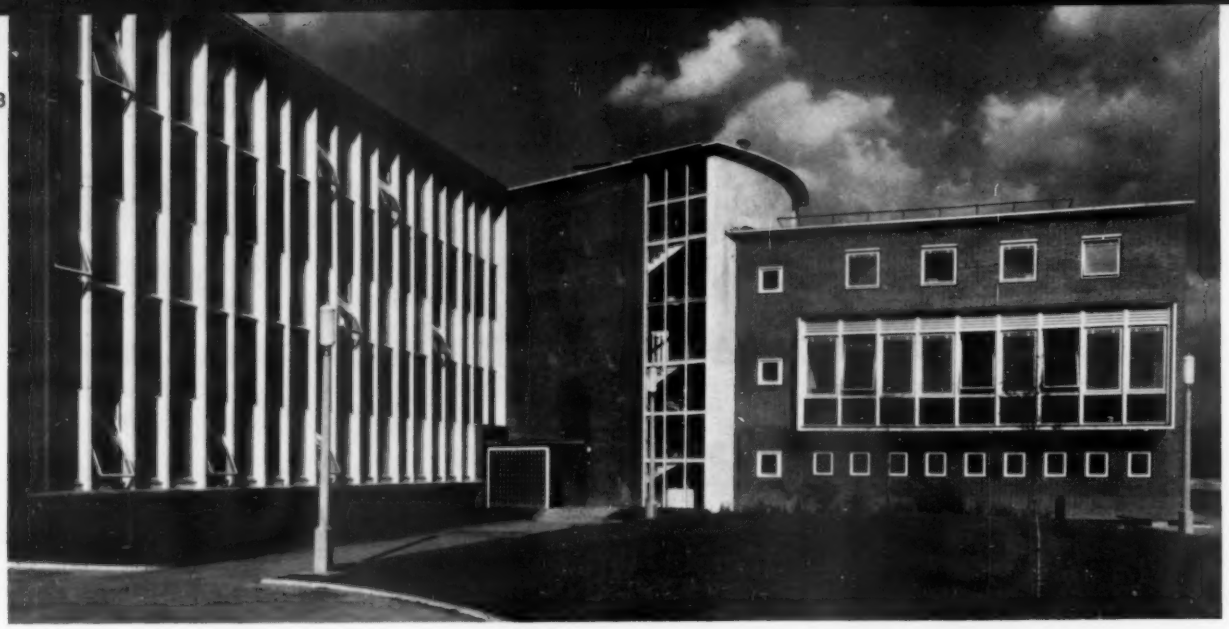


3, view from the south-west, with the offices on the right. 4, below, a plastic panel being lifted into position. The structural mullions, on alternate 4-ft. grid, are seen unclad.

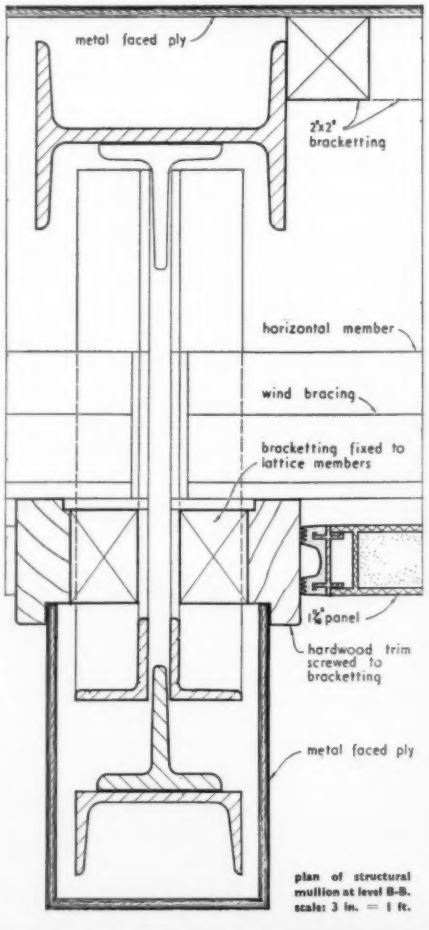
RESEARCH LABORATORIES AT WELWYN GARDEN CITY

E. D. JEFFERISS MATHEWS: ARCHITECT

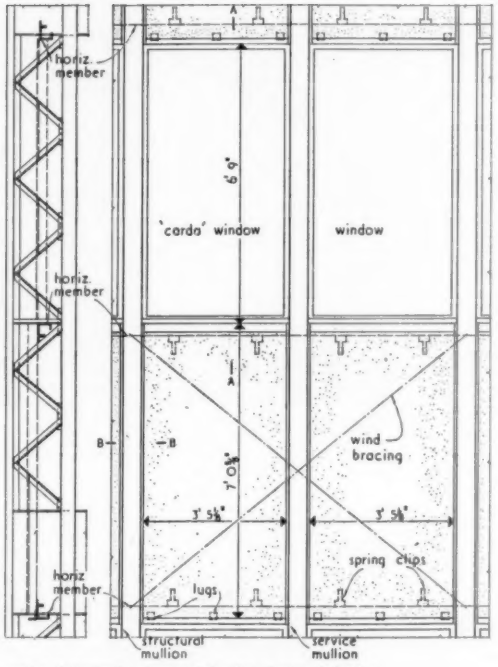
This three-storey laboratory and administration building, for ICI Plastics Division, the first stage of a development which may eventually comprise four similar blocks, consists of little more than an uninterrupted enclosure of space into which the detailed requirements of planning are fitted.

Experience has shown that rapid change and development in the nature of industrial research requires, sooner or later, changes either in bench arrangement, size of laboratories or the introduction of additional equipment. The clients, in collaboration with the technical staff of a firm manufacturing a type of cellular, laminated plastic sheeting, designed and constructed, in a temporary hut, a prototype laboratory in which essential units to meet the requirements would be tried out over a period, before the permanent building was erected. The principles of design were based on (*a*) standardized demountable partitions related in size to standardized benches, so that movement of the former could be related to the shape and size of rooms; (*b*) standardized design for such services as water, gas, compressed air, electricity and drainage so that alterations would merely require the addition or subtraction of standard parts; (*c*) standardized bench units, including bench tops, cupboards, drawer and sink units and fume hoods.

A 4-foot module was chosen and the flexibility required was that as far as possible within any 4 feet by 4 feet floor space water, compressed air, gas, electricity and telephones must be available and that wastes from sinks and fume extraction must also be available from each 4-foot-square space. The requirements in the laboratory space necessitated a clear unsupported span, between perimeter walls, which is 48 feet across by 176 feet long on each floor, without obstruction. The lattice steel framework, including the roof trusses, used 196 tons of steel, compared with 350 tons, which would have been required for an ordinary post and beam rolled-steel framework for the same floor area and height. The steelwork is designed to be independent of the structural brick walls at each end of the laboratory block, which are associated with the end staircase blocks rather than with the main framework. Site erection, carried out in the summer, took

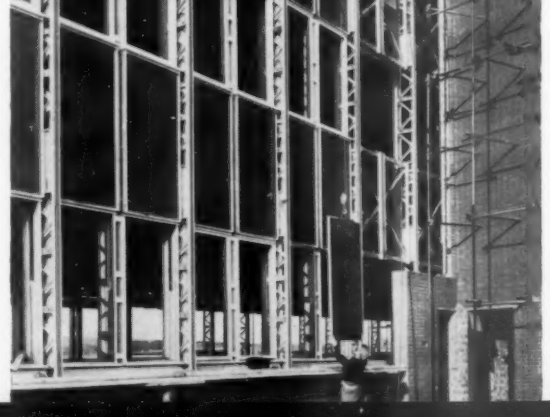


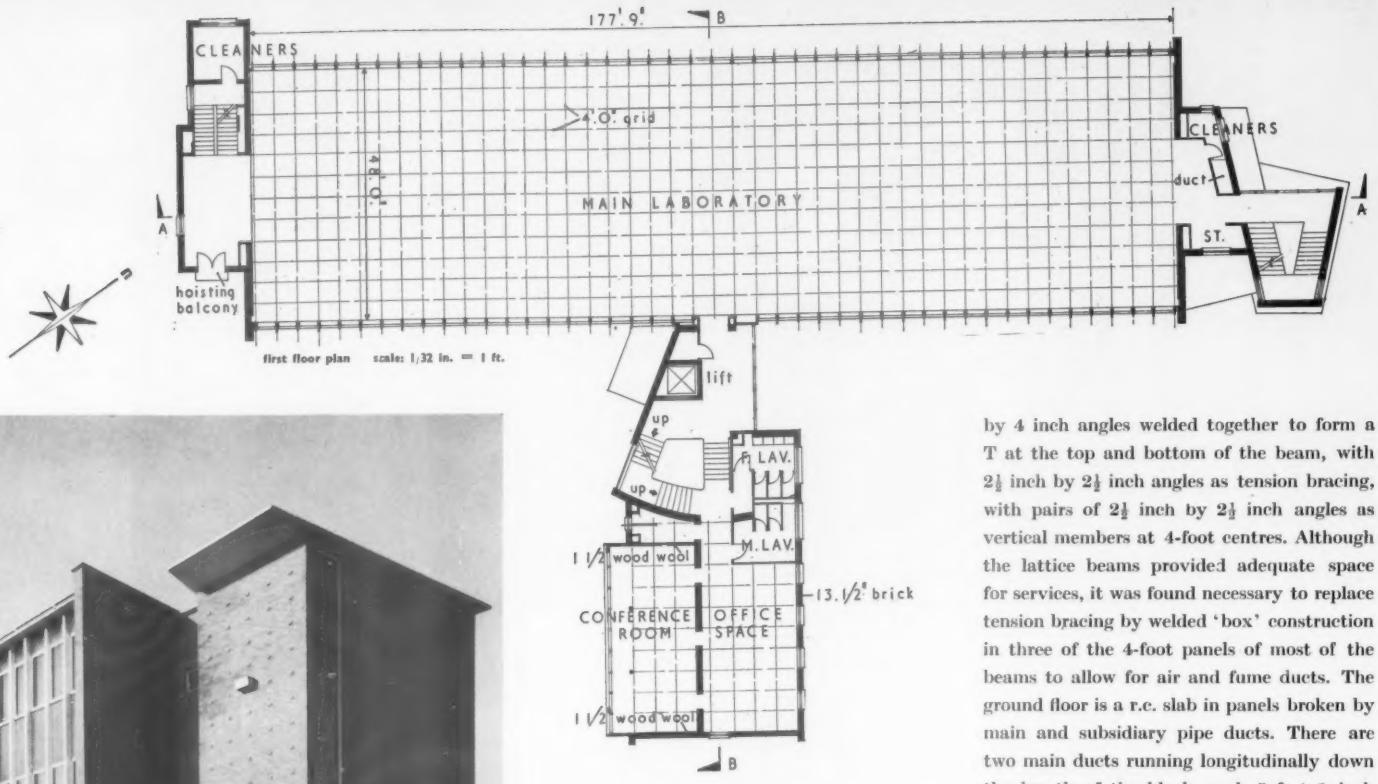
plan of structural mullion at level B-B. scale: 3 in. = 1 ft.



section of structural mullion and elevation of external cladding scale: 1/4 in. = 1 ft.

4





first floor plan scale: 1/32 in. = 1 ft.

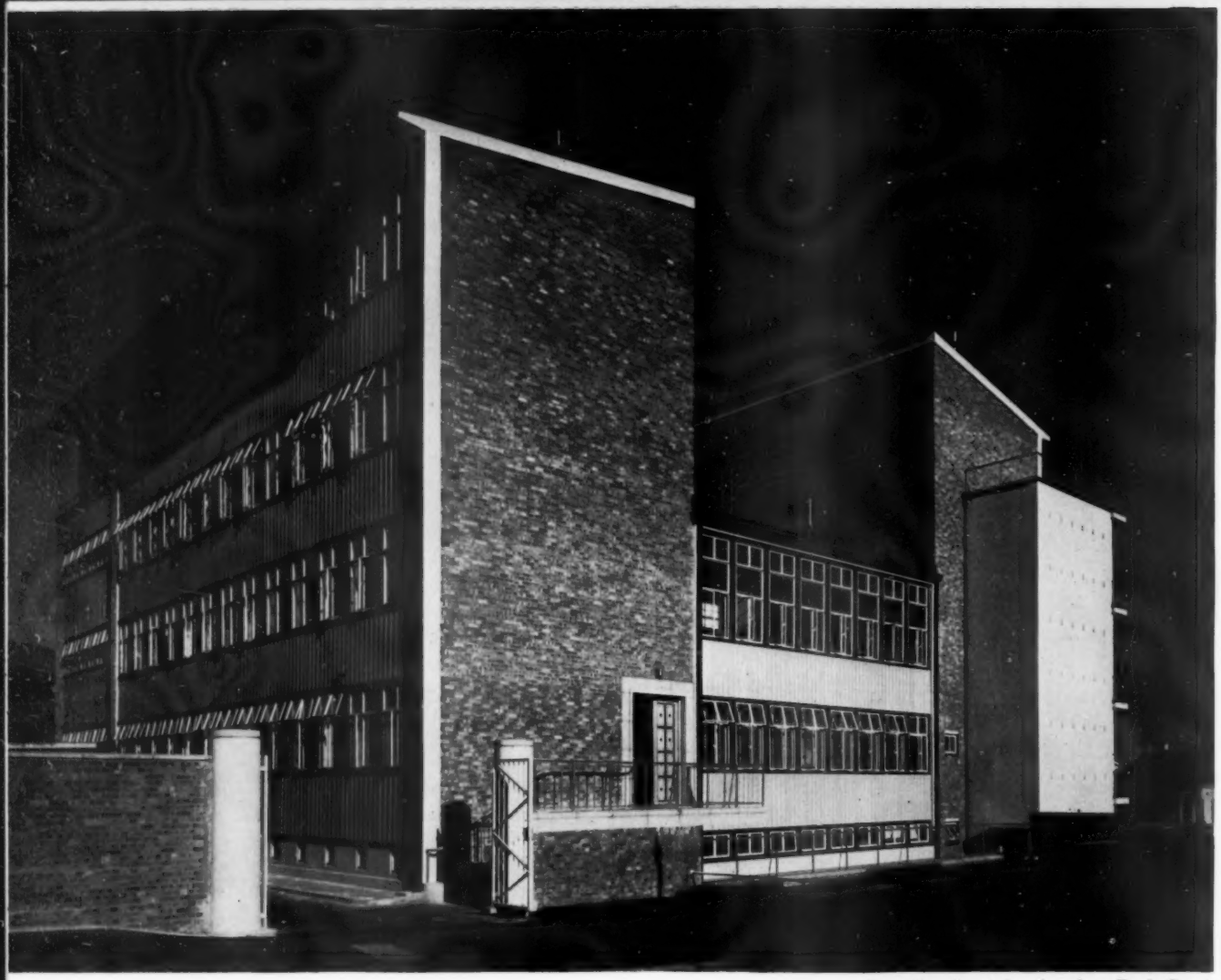
5, the north east entrance and staircase block from the east.

beams and trusses to the stub ends on the stanchions and the assembly and fixing of bracings and subsidiary members. The lattice stanchions are built up with 4 inch by 2 inch rolled steel channels on their outer face and 6 inch by 4 inch r.s.j.'s on their inner face, with $1\frac{3}{4}$ inch by $1\frac{3}{4}$ inch steel angles as bracing between. This gives an overall size from front to back of 1 foot 8 inches by 6 inches wide. The main beams are 2 feet 6 inches deep formed with a pair of 3 inch by 4 inch angles welded together to form a T at the top and bottom of the beam, with $2\frac{1}{2}$ inch by $2\frac{1}{2}$ inch angles as tension bracing, with pairs of $2\frac{1}{2}$ inch by $2\frac{1}{2}$ inch angles as vertical members at 4-foot centres. Although the lattice beams provided adequate space for services, it was found necessary to replace tension bracing by welded 'box' construction in three of the 4-foot panels of most of the beams to allow for air and fume ducts. The ground floor is a r.c. slab in panels broken by main and subsidiary pipe ducts. There are two main ducts running longitudinally down the length of the block, each 5 feet 1 inch wide by 3 feet deep, two subsidiary longitudinal ducts along each perimeter wall and ducts across the block at 24-foot centres.

Partition walls are formed with cellular plastic panels 4 feet wide, being the maximum manufacturing width. Benching was based on a 4-foot module in length and a working depth of 2 feet 3 inches. The underbench furniture is constructed of plastic panels supporting bench tops of plastic panels with a hardwood veneer.

eight weeks. Floors are constructed of precast foam slag panels, 2 feet wide and spanning 4 feet across the module of the framework. These panels rest unfixed on the steelwork, with a bitumen felt strip under the bearings as insulation and to take up the inevitable irregularities in the casting of the panels. The roof is low pitched and the trusses follow the pattern of the beams and are placed at 8-foot centres. Between the trusses 6 inch by 3 inch steel channel purlins carry the roof covering. The whole of the steelwork was required at a time of national shortage, making it necessary to utilize existing stocks and use sections which could be rolled from steel railway track. As much fabrication as possible was carried out in the shops. The stanchions and structural mullions were shop welded and fabricated in one length 40 feet $3\frac{1}{4}$ inches long. To each stanchion 4-foot lengths of floor beams and roof truss were welded in the shops. Floor beams and roof trusses, less these 4-foot panels at each end, were shop welded. This amount of fabrication provided the largest units possible for road transport from Shropshire to the site. Site erection and welding was therefore confined to coupling

6, the main entrance hall with north point motif set in a pebble surround.



7, south and east elevations from Breda Street.

OFFICES IN CAPE TOWN, SOUTH AFRICA

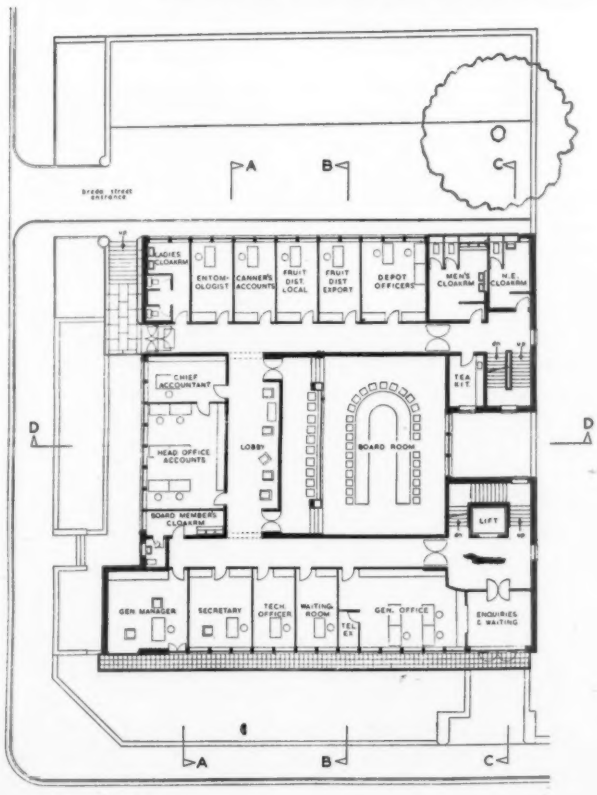
THORNTON-WHITE, PRICE LEWIS & STURROCK: ARCHITECTS

This building houses the headquarters offices of the Deciduous Fruit Board, consisting of general offices, accounts and record offices, board room and a reserve of space to allow for future developments. The site faces Mill Street, a comparatively narrow but busy thoroughfare, and it was decided to set back the main frontage of the building by 20 feet to give the offices greater privacy and provide a terrace for the staff.

The structural frame of reinforced concrete and floors are supported tapered beams at 2 feet 4 inch centres, cast in the form of a T with the 2-inch floor slab. Sheet steel troughs were designed as shuttering for the floor construction which could be removed and used again after the initial setting of the concrete, leaving props until final hardening.

8, typical adjustable steel partitioning.

The concrete frames, lintels and soffits of projecting balconies are plastered and painted. Gables and walls on the east elevation and the party wall on the west elevation are finished with buff facing bricks. Windows are of steel universal section with galvanized finish set in mastic and screwed to wooden sub-frames. Panelling covering brickwork between bands of windows on the main elevation is of anodized aluminium.



upper ground floor plan

HISTORY

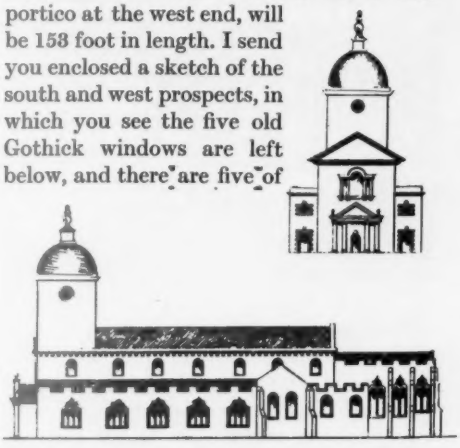
JOHN WOOD AT LLANDAFF

The bicentenary of the death of John Wood the Elder was duly commemorated with encomiums on his domestic work at Bath, but his genius had other sides, and was exercised in other places. In spite of the valuable work which has been done on Georgian Church architecture in recent years, no notice seems to have been taken of one very important work of his—the rehabilitation and partial rebuilding of Llandaff Cathedral by the elder Wood. Mr. Whiffen does not mention it, Messrs. Addleshaw and Etchells do not mention it, Mr. Summerson does not mention it in his essay on Wood nor in his Pelican History of Art, nor do Messrs. Mowbray Green and Ison. It has, however, recently been given its place by Miss Barbara Coates in her thesis on the work of Wood.* The following notes are much indebted to her research.

The story is simple enough. The medieval Cathedral of Llandaff was called ruinous as early as 1575 (*Some Account of the Condition of the Fabric of Llandaff Cathedral*, by the Bishop of Llandaff. 2nd edition, London, 1860, p. 7), and the 'great decay' of the Cathedral was again the object of complaint in the Chapter Records in 1721 (*ib.* p. 13). In 1723 the roof fell in and shattered the tower and wall. So in 1732 Mr. Wood of Bath was asked to survey the church and make estimates of repairs (*ib.* p. 15). The contract for these repairs was made in 1734. The work was completed in 1752—the date inscribed on the keystone of the west wall separating the restored parts of the church from the ruin. For the remarkable thing is that Wood erected a Georgian church inside the medieval shell evidently still wholly unaffected by any hankering after a revival of medieval forms or by any yearning for the beauty of ruins. 'We have repaired the walls,' says a letter of Dr. John Harris, Bishop of Llandaff, to Lord Rowle (*ib.*, p. 17), 'within sixty feet of the west door, and covered with new timber the Choir, and carried a new roof from the east end of the Choir to the above-mentioned part of the body of the Church, and covered it with milled lead: and, as we have a quarry of alabaster near the place, with other very good materials for stucco, we have employed a skilful plasterer to adorn the inside in such a manner as decency requires, and we are enabled by our stock to do. . . . We propose to take down the two steeples which at present serve as a western front to the two aisles, for they are very ruinous, and to raise a tower over the front of the Nave, and then to finish with a rustic porch!'

In the last sentence it should be explained that rustic does not here mean rustic in the sense of a tree-trunk column and thatched roofs, but in the sense of Serlio, that is rusticated, as indeed the window surrounds of Wood's building are.

Another letter, this one dated 1736, gives some more information on the new work. It was written by the Rev. T. Davis to Mr. Willis (*ib.*, pp. 19 and 20). 'We have carryed on, and covered about two-thirds of the whole Church, which is now well leaded, rooffe and isles, and handsomely seated; and, according to the new plan, will next spring be carry'd about twenty feet further to the west; so that if the old Church be shortened it will not be more than forty foot, and this new plan will be of a more regular and exact proportion than the old Church, which is agreed on all hands to be too long for its breadth. The new Church, with the tower and portico at the west end, will be 153 foot in length. I send you enclosed a sketch of the south and west prospects, in which you see the five old Gothick windows are left below, and there are five of the like sort on the north side that answer these five on the south, two of which are now done [2] . . . The Church on the inside, as far as 'tis cieled and plaistered, which is something beyond the west end of the choire, looks exceeding fine, and is a very stately and beautiful room. The ceiling is done groyn or hip ways, with a large rose in the centre when the groyns meet. There are under the upper windows a large bold cornice with modelions, and between the choire and the chancel there is a large arch (which divides the choire and chancel) enriched with fine fretwork underneath in stucko.



2, *Wood's sketches of the proposed south and west elevation.*

'The area of the whole Church is to be considerably raised: there will be two steps to go out of the nave into the choire, three steps out of the choire into the chancel, and five steps to ascent to the communion table. Between the choire and chancel there will be large banisters, and about the communion table handsome rails, with a neat iron door in the middle: soe that when it is finished, it will (in the judgement of most people who have seen the plan) be a very neat and elegant Church, unless the altar piece (which looks like a large portico) spoils the view of it.'

A few points in this letter need special attention and can be checked from the nineteenth century reproductions from the

1, *south-east view of the ruins of Llandaff Cathedral from a print of* 1830.

* *The Two John Woods, Eighteenth Century Architects at Bath*, RIBA Thesis, 1946.

3, *the interior of Llandaff designed by Wood.*

Bishop of Llandaff's book which were made after the sketches of 1736. One is the very early and disarmingly uninformed Neo-Gothicism of the aisle windows with their concave curtain-like heads, inspired perhaps by the odd concavities of the early fourteenth century tombs in Bristol Cathedral. With the exception of this one feature, the church has the honest box-shape of the eighteenth century. The square west tower was never erected.

It is, however, principally the inside which makes a record of the church worth while. We have little preserved today of eighteenth century church work as grandly Roman as this temple front given by Wood to the altar and these two symmetrically placed aedicules of which one gave access to the pulpit, 3.

The church stood as illustrated until 1859 when Pritchard and Seddon swept it away to convert the medieval cathedral into a High-Victorian edifice. **N. P.**

4, *south-west view of Llandaff Cathedral*, 1846.

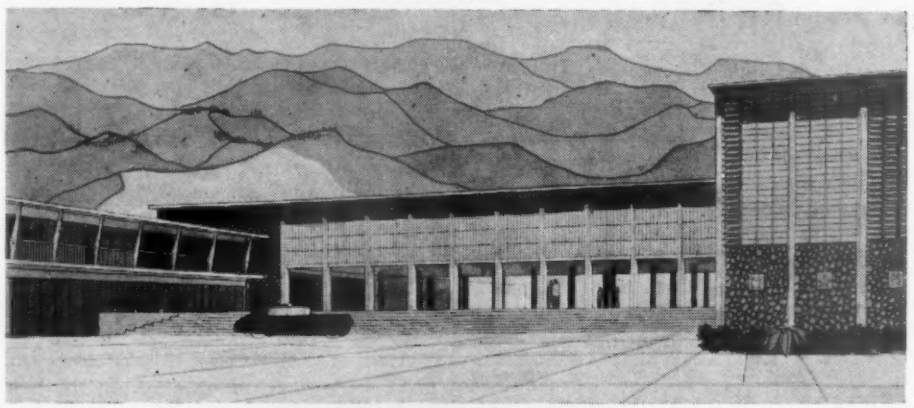
WORLD

WEST INDIES UNIVERSITY

The main portion of the Senate Building and Registry Wing for the University of the West Indies (see AR, October, 1953) was opened by her Majesty the Queen in November last year. The architects are Norman and Dawbarn. To the left a Great Hall is planned to stand axially at the end of a grass strip some three-quarters of a mile long, terminating in an amphitheatre to be carved out of Long Mountain. This is to be built shortly. Facing the main approach, parallel to the grass strip, is an undercroft through which the foothills of the Blue Mountains can be seen. Above this are temporary Senate Chamber and rooms for Principal, Registrar, Bursar, and Steward. This will be extended when the Great Hall is built and the final Senate Chamber will connect by staircase within the Hall to the platform. The undercroft will then serve as a covered assembly point; meanwhile it is used for a variety of purposes: it was there that Her Majesty opened the building.

The registry wing contains, on the ground floor, the Department of Extra Mural Studies and, on the first floor, a large administrative office. An extension is planned.

Construction is of reinforced concrete frame with timber joisted and boarded flat roof, covered with bitumen felt and white chippings, and lined with gypsum ceiling panels. The first floor is an in situ r.c. slab covered with hardwood strip flooring; several bays have been temporarily left out to enable the south end of the building to serve as a Great Hall for the time being. The ground floor is paved with cement screeding. The great sun screen which covers the entire west front is constructed entirely of Honduras Pine. Walling is in rendered concrete blockwork. Construction of the registry wing is similar but with a r.c. roof and precast r.c. standard floor units with a screed finish. Office floors are covered with lino. Walling is also mainly rendered concrete blockwork with some random rubble and vertical pine boarding. Sun baffles on north face are fixed aluminium vertical fins and concrete horizontal fins. **S.E.D.**



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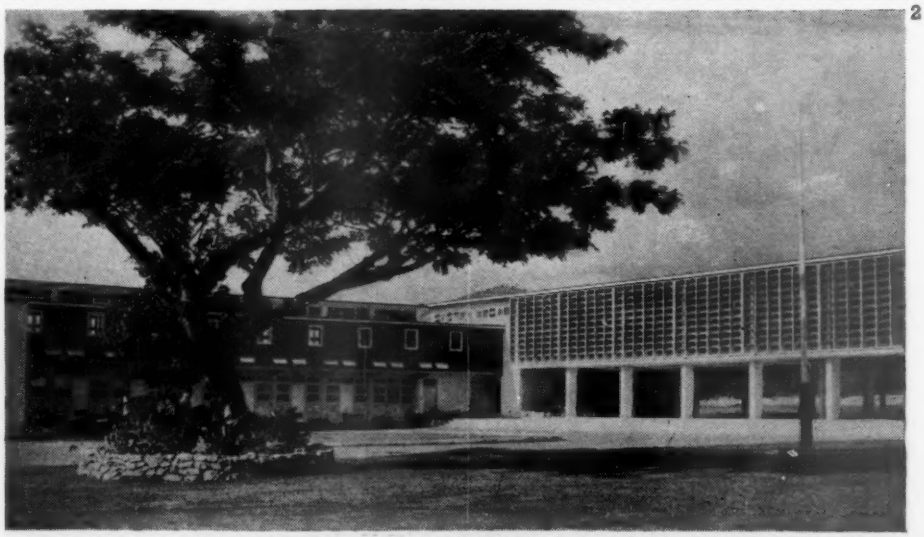

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1, *perspective by Gordon Cullen of the Senate with part of the Administration block on the left and the Great Hall on the right, published in The Architectural Review in October, 1953.* 2, *the Administration block and the wing linking it to the Great Hall, as built.*

The growing prestige of the Museum of Modern Art in Sao Paulo, Brazil, has made the prizes awarded at its biennial exhibitions especially to be valued as marks of distinction in the various fields of the plastic arts and most particularly in architecture.

Although 1954 is only the second *Bienal de Sao Paulo*, the thoroughness and adventurousness of the jury who made the awards has confirmed many high hopes, for the prizes have gone to well-known and little-known architects, to young and old, and not merely to a limited circle of well-known 'bigs.'

Thus two prizes went to architects born in 1918–19—to Sergio Bernardes for the Soarez House, illustrated and described in the AR for March, 1954, and to Paul Rudolph for his Cabana Club,

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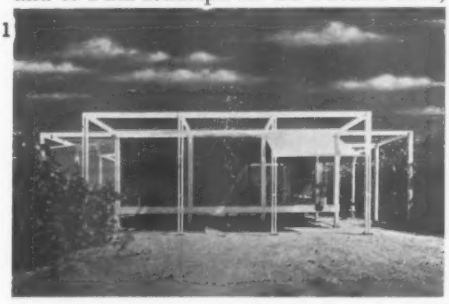

1. These awards are symptomatic, for both these designers are on the threshold of a world reputation, but in the case of the flats in Lisbon, 2, by d'Athouguia and Sanchez, the jury broke new ground by making an award to architects and to a project which are hardly known in Portugal even, and also in recognizing

2

that one of the problems facing housing architects is that the plans of individual apartments may not be within their control. They raised the same point in connection with the Ceppas block by Jorge Moreira, 3, to which also they

3

awarded an honourable mention, praising the original façade treatment which he had evolved in spite of the limitations imposed by the plan.

Another 'unknown' who received a deserved award was Zvonimir Pozgay, of

4

Yugoslavia, for his complex of beach cabins and bathing huts, under continuous concrete canopies, 4, while two Italian schemes which are known but not, perhaps, as well known as they should be, have received from the *Bienal* a measure of belated recognition. These were Zavanella's 'OM' stand at the Milan trade fair of 1948, a pioneer of the *tensistruttura* display technique, 5, and the superb concrete vault of the fruit-market at

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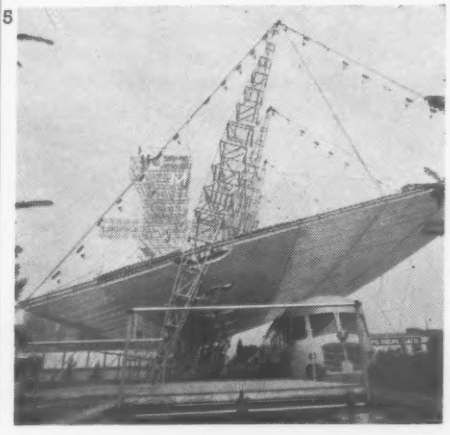

6

Pescia, 6, by Gori and Associates. Sensitive adaptation to the needs and stature of children were praised in the School at West Columbia by Donald Barthelme, 7,

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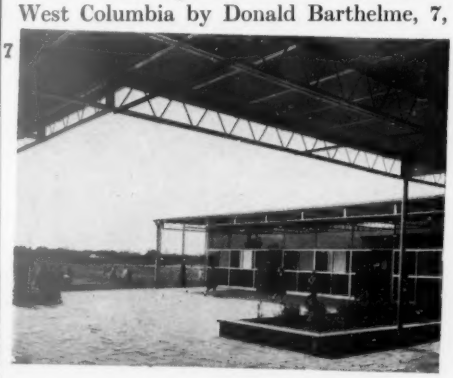

which won the award for schools, and in the beautifully planned Pediatric Hospital in Sao Paulo by Jorge Moreira, 8, which

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gained him a major prize in addition to the honourable mention for the Ceppas block.

Two other prizes which went to the USA were, to Craig Ellwood for his row-houses

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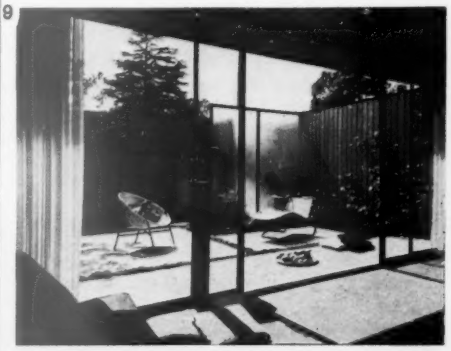

with courts in Hollywood, 9, and to Philip Johnson for the now well-known Hodgson House, 10, which was praised for the effects which it makes with very simple

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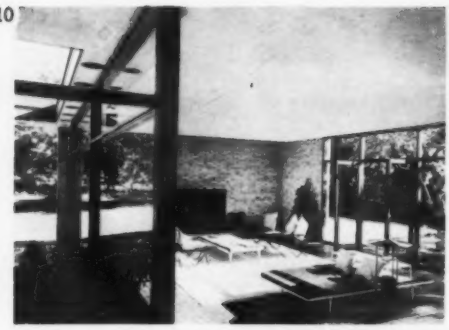

elements, and similar praise was bestowed on Arne Jacobsen's Massey-Harris plant at Copenhagen, 12, which won the award for industrial buildings.

The award for landscaping and gardening went, with an inevitability which is beyond quibble, to Roberto Burle-Marx, in recognition of his whole output and the contribution he has made to the Brazilian

11

scene, 11, and, turning from the fully established to the no more than promising, awards for student schemes were made to the architecture schools of Waseda University, Tokyo, of Sao Paulo University, and the Politecnico, Milan. The absence of awards to British architects is to be regretted, but the jury cannot give prizes to material which is not submitted, and since awards were withheld this year in many classes in which British designers might have done well, it is to be hoped that a stronger representation will be made in 1946, when —if the jury is of the quality of this year's: Gropius, Sert, Aalto, Rogers, Bratke, Reidy and Professor Gomes Machado—we may hope to bear away some of the palms.

P.R.B.

EXHIBITIONS

PAINTING

The limited retrospective of Victor Pasmore's work recently held at the ICA began with the final examples of his Euston Road style and came up to date with his charmingly out-of-date studies in constructivism. The earliest works were crowded together at one end of the Gallery, and the recent constructions were carefully arranged at the other. In between, there were sensitively conservative exercises in pointillism and non-figurative composition. There were also two masterpieces—'The Gardens of Hammersmith' (1946-7) *and 'Snowstorm'* (1951). Lawrence Alloway, who organized the exhibition, did not use these two remarkable paintings as centre-pieces, and although it was obvious that he played them down in order to present the work in perspex and plastic, 1, as the triumphant outcome of ten years of logical development, he was

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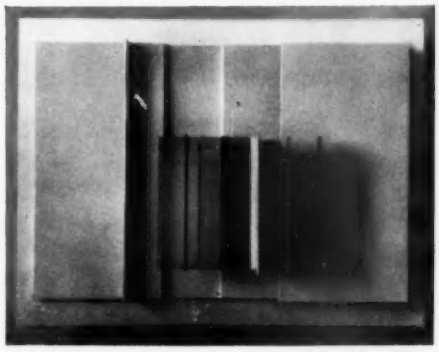

right to leave them in the production line and show them amidst the formal games with dots and spirals from which they sprang. Pasmore's ability to produce works of the highest imaginative order after long sessions with rules and regulations ought to silence those angry admirers of his early work who wanted him to remain the best of our belated impressionists, and it ought to make those who have acknowledged his finest achievements less impatient with his constructivist experiments, for in view of what has happened in the past it is not unreasonable to hope that a great work dedicated to light and space will emerge from his preoccupation with transparent reliefs and shadowy photostats.

Peter Lanyon, who was awarded the Critics' Prize for 1954, has been showing his latest paintings at Gimpel Fils and seems to have mixed all his colours in preparation for atmospheric views of the Cornish scene and then slapped his paint on to the canvas in a very lively fashion without bothering to represent anything. Two pieces of mobile sculpture, endlessly rocking in the middle of the Gallery, emulated the motion of the sea, the paintings conveyed a general impression of the oily blacks and greens of wet rock, and one of them (earlier than the others perhaps) even afforded a turgid glimpse

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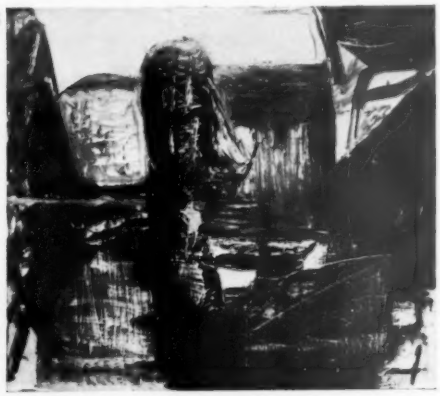

of a rock thrusting out of the water, with a green-topped cliff beyond, 2, so, after all, everything conspired to produce a muffled but obsessive sense of the Cornish scene, and if Lanyon will come into the open and either present an image or stop hinting that there may be one buried under the impasto, we shall be able to admire his painterly qualities with less irritability.

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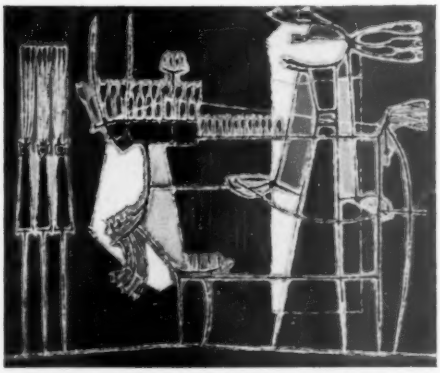

Stefan Knapp, who has a gift for large-scale decoration, and has been holding a remarkably successful exhibition of paintings at the Hanover Gallery, has perfected his own medium, an oil-based paint of intense luminosity and durability which

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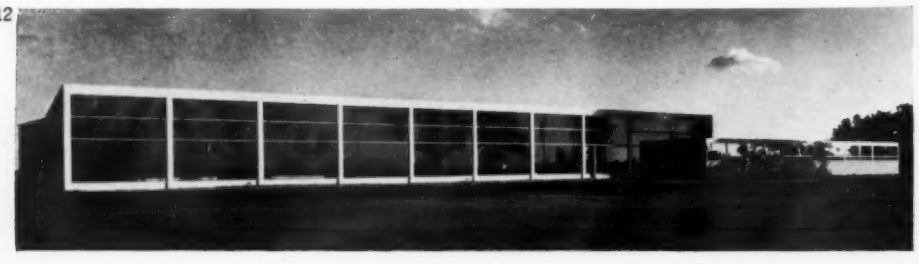

can be applied to any flat surface. His work attracted many people who are not regular gallery-goers, and the effulgent colour, the schematic treatment of figures and animals containing curious reminiscences of *art nouveau*, and the placid, 'golden age' ceremoniousness, 3, seem to have something to say to the collective unconscious.

The time will soon be ripe for an exhibition called 'Francis Bacon and his influence,' and one of Edward Middleditch's large monochromatic paintings will certainly have to be included. So far, my

4

own choice would be 'Trafalgar Square,' 4, exhibited in his one-man show at the Beaux Arts. His gloomy lyricism and his feeling for the magic of perspective are admirable, but his pictures still have the pinched look that gave his studies of babies an air of proletarian protest, and a more sensuous handling of paint is now definitely overdue.

The Scots have always contended that they have closer cultural ties with Paris than with London, and it is a pity that their warm response to French painting has only given their art a somewhat characterless internationalism. There is nothing specifically Scottish about the two very able painters of the Edinburgh School whose works were brought to the new Burlington Galleries by the Arts Council. W. G. Gillies is a highly competent painter of landscape and still life, and John Maxwell is a fantasist whose delightfully romantic flower-pieces, 5, influenced by Odilon Redon, gave the exhibition a poetic overtone. But to English eyes the work of these two artists has no visible

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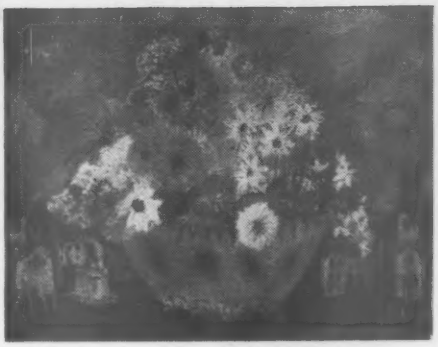

means of support apart from its French derivations and seems practically anonymous.

Robert Melville

BOOKS

A MASTER OF THE PICTURESQUE

W. G. CONSTABLE. *Richard Wilson* (*English Master Painters*). *Routledge and Kegan Paul.* £3 10*s*.

Wilson's early success as a landscape painter (a success he had shown no great signs of achieving in his first choice of a career as a portrait painter) was due to his ability to give permanent form to Claudian memories brought back from the Grand Tour. For the young Englishmen who flocked to Rome in the eighteenth century saw the Italian landscape largely in terms of Claude's paintings and for them, Wilson was able to

> '. . . catch those glowing scenes that
> taught a *Claude*
> To grace his canvas with Hesperian hues
> And scenes like these on Memory's tablets
> drawn
> Bring back to England . . .'

and this, as Mason emphasized in *The English Garden*, was one of the essential ingredients of the picturesque view of nature. Wilson belongs to that early phase in the development of the picturesque which had its roots in the Grand Tour and even, in the earlier English landscape gardens such as Chiswick and Stowe, involved an attempt to impose actual Italianate forms on the landscape of this country. It was in Italy that Wilson was persuaded, first by Zuccarelli at Venice and later at Rome by Vernet, to abandon portrait painting completely in favour of landscape.

In the early years after his return to England he embarked on a number of subject pieces in the manner of Claude, of which the most celebrated, the Tate Gallery's *Destruction of Niobe's Children*, was a war casualty. But for the most part his output consisted of pure landscape paintings. Although he continued to paint Italian scenes from memory, he naturally turned more and more to England and Wales for his subjects, always imposing on the northern scenery the same Claudian formula he had adopted for his Italian views, even where commissioned views of country houses of purely topographical intention were concerned. For some years after his return Wilson achieved a considerable success, but about 1770 he appears to have lost the favour of the picture buying public and to have gradually slipped into chronic insobriety and indigence, eventually retiring in 1781 in broken health and considerable poverty to North Wales where he died shortly afterwards. The reason for this loss of patronage is something of a mystery. Hodges, one of Wilson's pupils, attributed it to the rivalry of Zuccarelli who visited London for a stay of several years at the time of his election as a foundation member of the Royal Academy in 1768. Mr. Constable thinks that there is some corroborative evidence for this, and certainly George III whose favourite landscape painter was Zuccarelli, seems to have taken an immediate dislike to Wilson's views of Kew Gardens when shown them between 1760 and 1762. But we may perhaps be permitted to see in the changed conceptions of the picturesque which began to prevail during the 1770's at least a contributory cause of Wilson's decline from favour. It is perhaps not without significance in this connection that Arthur Young in his *Tour of the North* of 1768 singles out 'the cheerfulness of Zuccarelli' as one of the necessary ingredients of the picturesque view. But whatever causes may have been at work Wilson only emerged completely from disfavour some decades after his death with the exhibition of 84 of his works at the Royal Institution in 1814. Since then he has been generally recognized, with Turner and Constable, as one of the three greatest masters of English landscape painting.

For this reason alone Wilson has rightly been selected for early inclusion in the *English Master Painters* for, unlike the two other artists named above, his painting (as distinct from his drawings) has never before received the critical treatment it deserves. Wilson presents peculiar difficulties to the art historian. Anyone who has watched the London auction rooms attentively will be aware of the existence of an enormous mass of painting which passes under Wilson's name, varying from perfectly genuine work, through students' copies honestly produced under the master's instruction, to those 'innocent impostures' to which Thomas Jones alone amongst Wilson's contemporaries confessed to passing off 'amongst Our Connoisseurs at some of the public Sales for Originals.' And the problem is further complicated by the fact that Wilson himself is known to have repeated his most successful compositions a number of times and is even alleged, in his days of indigence, to have touched up students' copies and passed them off as his own. Questions of authenticity must therefore play a prominent part in any adequate consideration of Wilson, and yet they are just the questions most in dispute. A complete *catalogue raisonnée* is impossible; the honest historian can only record all the versions of a Wilson subject which seem of a sufficiently high quality. This is what Mr. Constable has done. From his distant observation post in Boston he seems to have kept an extraordinarily close eye on the London sale room. His notes on the variant versions of the well-known *White Monk*, for instance, run to

more than six columns of print which are not a less valuable record because some of the separately recorded versions may eventually be found to coalesce into a single picture.

Mr. Constable has subjected the scanty traditional records of Wilson's life to a much needed sifting and has even unearthed a few new items of biographical information, but perhaps the most impressive feature of his book is the extraordinary thoroughness of his *apparatus criticus*. There are lists of Wilson's dated or nearly datable works, biographical notices of Wilson's pupils and imitators, and an analysis of his palette and his technique, a chapter on 'Collectors, Connoisseurs and Critics' which gives a conspectus of the fluctuations in Wilson's reputation, and there are at the end three separate indexes (of owners, of titles, and of general subjects), a feature whose absence or inadequacy has seriously handicapped the earlier books in this admirable series. Here is the standard work on its subject for many years to come.

F. J. B. Watson

EARLY ENGLISH BUT NOT E. E.

EARLY ENGLISH CHURCHES IN AMERICA, 1607-1807. *By Stephen P. Dorsey. Oxford University Press, New York.*

Someone—Mr. Clifford Musgrave has corrected the notion that it was Sydney Smith—once said of Brighton Pavilion that it looked as if St. Paul's had gone down to the sea and pupped. A silly remark—but one which the English visitor to America as he moves about the country cannot help remembering; for it really does look as if St. Martin-in-the-Fields had crossed the Atlantic to the same end. Before long he discovers a curious fact about this multitudinous progeny—namely that many, perhaps even most, of the imitations of St. Martin's steeple were put up a hundred years or more after their prototype; while small-town builders were coarsening Gibbs's design with the heavy mouldings and bracket cornices of the mid-nineteenth-century Italianate vernacular, Arthur Gilman was reviving it as an academic formula in his Boston Arlington Street Church of 1859.

Mr. Dorsey, taking in nothing begun after 1807, is not concerned with these developments; nor, since he confines himself to Episcopal churches, is he concerned with the First Baptist Meeting House of 1775 at Providence, whose steeple came straight out of Gibbs's *Book of Architecture*, any more than with Latrobe's splendid Roman Catholic Cathedral at Baltimore, the designing of which fell just inside his period. Some may regret these limitations. However, an author must begin and end somewhere.

The ample format and numerous photographs suggest that this is a picture book; but it is more than that. Mr. Dorsey, rather oddly, calls it 'a visual essay'; but it is not that either. In fact Mr. Dorsey is less informative about the visual qualities of the buildings he illustrates than about the history of the Church of England in America, and its successor the Protestant Episcopal Church, for which those buildings were erected: when he writes of their planning and furnishing it is with the main emphasis upon liturgical function. On this, and on the history of the Church in America, he is excellent, while his text is all the more valuable for being arranged in such a way as to bring out the different courses which that history took in the different colonies.

The pictorial sections of the book are less good. The photogravure is inclined to be sooty, and the choice of subjects for illustration is sometimes disappointing, having too often (one feels) been dictated by what photographs happened to be available. Take monuments. Mr. Dorsey shows us three mural tablets, all dating from the 1790's and of identical neo-classical type; but—to select from three churches which Mr. Dorsey illustrates—in King's Chapel, Boston, Samuel Vassall is commemorated by an exceedingly accomplished baroque work (complete with bust) by W. Tyler of London, in Trinity Church, Newport, there is a portrait medallion of the Rev. Marmaduke Brown signed by John Smyth of Dublin, and in Christ Church, Philadelphia, John Cox of Cheltenham, who was drowned in the Delaware in 1713, has a cartouche tablet carved by a Gloucestershire mason in Gloucestershire stone, just as he would have had if he had been drowned in the Severn. Then the historian of architecture—as distinct from the churchman—may feel that in the captions to the illustrations Mr. Dorsey is apt to miss his chances. For instance, although Christ Church, Boston, is attributed on good grounds to William Price and Trinity Church, Newport, to Richard Munday, and both were interesting figures, he mentions neither—nor that the steeple of the Boston church was rebuilt to a modified design by Bulfinch. And to return to the Gibbs theme, one could wish that he had pointed out that the steeple of St. Paul's Chapel, New York City, was taken from the same plate in *A Book of Architecture* as was that of the Baptist church in Providence—especially as Pierre L'Enfant, who is thought to have built it, has been hailed as 'one of the chief inventive and liberating influences' that freed American architecture 'from the limitations of its English background.'

Marcus Whiffen

VIEWS OF SCANDINAVIA

SCANDINAVIA. *By Eric de Maré. Batsford.* 21*s.*

Eric de Maré's book on Scandinavia is full of charm. It gives the reader about a hundred beautiful pictures of the three countries during the seasons of leisure, most of them from old churches, palaces and castles It gives very little of modern architecture, of Sweden only the Stockholm Town Hall, a block of flats of mediocre architectural value and a characteristic but somewhat haphazard item of urban gardening; of Denmark only Klint's romantic Grundtvig Church, and of Norway nothing. Other books have been written about modern Scandinavian architecture; presumably Eric de Maré, though himself an architect, has wanted to give a background to the physical environment created by the architects of the last generations. Or, perhaps, a contrast.

One gets the feeling that past times are nearer to his heart than the struggle to transform three countries ruled by high officials and rich merchants into welfare states, where—except during election campaigns and in political editorials—labour and capital go hand in hand, and it is with some regret that one finds the author among those who wishfully try to demonstrate that the great invigorator of the modern phase not only of Swedish but also of northern architecture, Gunnar Asplund, was at the bottom of his heart the romantic, which he appeared to be—by pressure of the Zeitgeist then prevailing—when he began his short and brilliant career. Eric de Maré seems to take for granted that the social realists and the architectural puritans of to-day spurn the Stockholm City Hall as bourgeois escapism and as a piece of theatrical scenery. But what else is this genial work, the last monumental building in my country, created exclusively for delight, little for firmness, and not at all for commodity?

In his last chapter the author treads on the dangerous ground of the psychology of National Character. His chief concern is to discuss the question whether the welfare state has made the people happier or not. He seems to be inclined to answer that it has made them creative, but perfectionist and neurotic. This is probably true, but may be regarded as an infantile disease, caused by the disappearance of the old codes. And why is it that the Danes who, as the author rightly says, 'have come to terms with life' better than their neighbours and are the most 'human' people, have one of the highest suicide rates in Europe? (The rate is not 'too high' in Sweden; it is among the lowest in Europe.)

Some mistakes in writing about the history of the three countries could hardly be evaded by a writer who by necessity had to rely mainly upon textbooks. A couple of them are mentioned here, not for the sake of schoolmasterly perfectionism, but because they have some importance for historical perspective. Olaf Haraldson, the king-saint of Norway, was not defeated and killed at Stiklestad 1030 by the peasants because of the people's antagonism towards his Christian faith, but by a league of feudal lords when he tried to break up their rule and establish a national Norwegian unity. Gustav Vasa's war of liberation against Christian II of Denmark was a civil war, where party stood against party, Christian being the king of the three countries united in the Kalmar Union, and being supported by some of the most civilized of the Swedish dignitaries, the most influential the archbishop Gustaf Trolle, the first Swede to know Greek, it has been said, and the last for a long barbarian time to come.

Eric de Maré feels at home in the North. Though born and bred in England his blood is almost entirely Swedish, and what he writes about his ancestors—insignificant incidents but full of meaning—has an adequate atmosphere, and gives the flavour of Swedish country houses or urban residences. This is not a book for the social student, but to those who want to make a sentimental journey to Scandinavia nothing better could be recommended.

Gregor Paulsson

A MONTHLY REVIEW
OF BUILDING TECHNIQUES
& INDUSTRIAL DESIGN

skill

A tap fulfilling the same function as the high-necked pillar (see 11, page 418), arranged with the valve head at the normal level at an inclined angle, thus more easily operated, and having much in common with laboratory fittings. No. 140 'Hiflo' sink tap, by Barking Brassware, ½ inch size with nozzle to be set at any angle or ¾ inch size with swivel nozzle.

DESIGN REVIEW

Sanitary Brassware

Mary Ward

Both manufacturers and architects are well aware of, and probably somewhat inhibited by, the lack of agreement amongst local water authorities as to what constitutes acceptable equipment. Nevertheless, considerable variation is possible in the visible parts of taps (the cover, crutch and nose) and it is disheartening to see how many products suggest in their form that the diagrams in the B.S. specification,* included solely for mechanical explanation, are accepted as an aesthetic standard. The exceptional products which give positive visual pleasure are therefore particularly welcome.

Those accessories which are not governed by exacting standards (tumbler holders, soap dishes, towel racks) show far less respect for function in their design and become wilful in form. The visual and practical advantages of combining a number of these objects into one unit seem to have been overlooked, or rejected, and as yet the consumer is condemned to a multiplicity of tedious plugging operations, often through tiling.

Research in the field generally must be frustrating. With the exception of a limited use of plastics, chromium plated brass seems as yet the essential material for taps. Heavy tooling costs, stocking and marketing difficulties all contribute to the industry's apparent resistance to change.

* The essentials of the standard draw off tap and stop valve are fully prescribed by B.S. 1010, 1953; the third revision since 1942.

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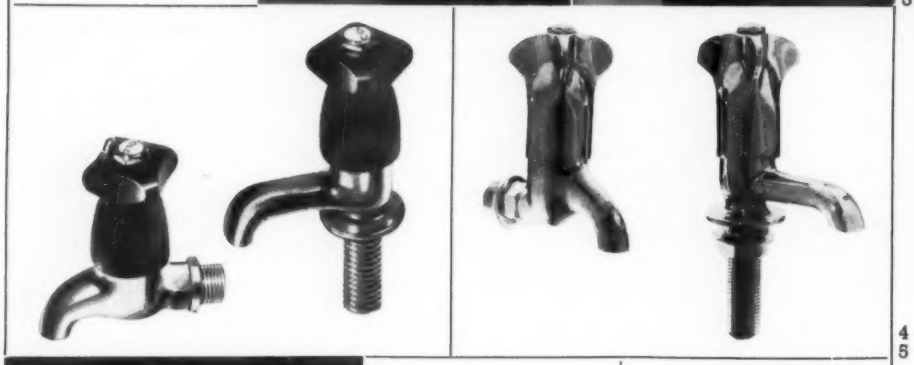

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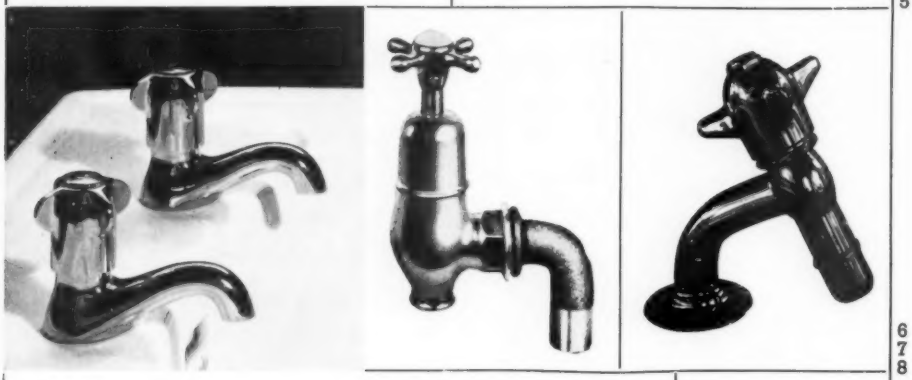

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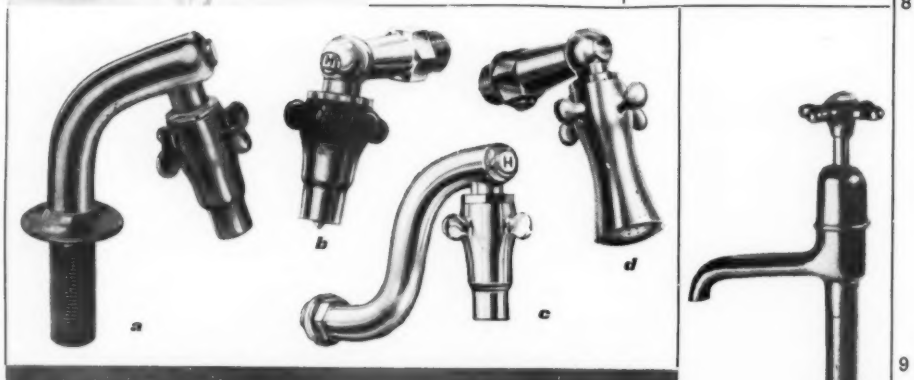

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taps

In view of many manufacturers' reluctance to quote prices, due to rapid fluctuation in costs of raw materials, none is quoted here.

Figure 5 in BS 1010, 1953, is a section-elevation of a pillar tap (size ½ inch to 1 inch). This draw off tap, with a vertical inlet and a horizontal free outlet, might well by virtue of common consent over a long period be accepted as the norm among taps.

1, the realization of the norm which includes the optional faired hexagon (useful in the manipulation of the cover but aesthetically disturbing) at the lower edge of the top body casting. Peglers' No. BS159ECCP; available in ½ inch, ¾ inch and 1 inch sizes.

2, the inclined pillar tap can often be used to advantage for small children, or in restricted situations. This example is by Barber Wilson. No. 2200 ¾ inch.

3, a pillar tap, free of undercuts and revealing a sensitive attention to detail within the limits of BS 1010 : 1953. This design is particularly suitable for small basins. Hot and cold taps are distinguished by red and green plastic inserts in the head. By Barking Brassware Company: No. 107 'Hiflo' ½ inch or ¾ inch size.

A second category of screw-down valve is distinguished by a union of upper body casting and head.

4, an example of this category with head and sleeve in black plastic. By Samuel Booth, 'Clenex' ½ inch and ¾ inch sizes, bib and pillar types.

5, a similar type without undercuts on the head. By Sanbra, 'Easilyne,' No. 1101EL pillar and 1102EL bib. Available finishes; all chrome, or head and sleeve in black or ivory plastic.

6, another example with the advantage of no undercuts on body or head. 'Sheerline' by Shanks.

7, an example of a third type of screw-down valve, a globe tap, normally used for baths only. Samuel Booth, No. 5330 to BSS 1953, or No. 630 MOH ¾ inch size.

8, similar to the globe tap. By Byrom, available in full range of types and sizes.

9, a design which allows washer changing without cutting off main supply, but does not comply with BSS 1010. 'Supatap' by F. H. Bourner. RT/A swan-neck-pillar, ½ inch, **a,** ½ inch swan-necked bib, **c,** and bibcock model **b** with plastic ear pieces in black, cream, primrose, blue, pink and green. The sprinkler bibcock is designed for washing under running water, **d.** A sink pillar is also available.

10, a patent non-concussive spring action valve. This type is mainly for institutional work where there would be danger of serious waste of water with the careless use of the screwdown type. This design has the special merit of being easily adjusted under various pressures whilst fixed and in use. 'Barwil' by Barber Wilson; bib or pillar sizes ½ inch or ¾ inch.

11, high necked pillar tap for use on sinks for bucket filling. By Samuel Booth; supplied with any length of pedestal or tail, but the standard

12
13

size has 3½ inch long nose, 6 inch long pedestal and 3 inch tail, porcelain or metal discs or with black plastic 'Clenex' head.

12, the same type by Sanbra, 'Easilyne' all chrome or black or cream plastic head and sleeve.

13, an elbow action pillar tap for use in hospitals and surgeries. No. EA 103 ½ inch 'Hiflo,' by Barking Brassware. This tap shows an excellent balance of parts.

combination taps, showers and mixers

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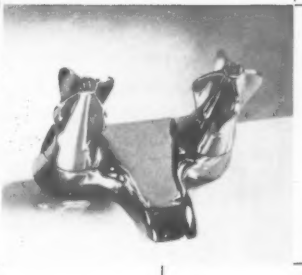

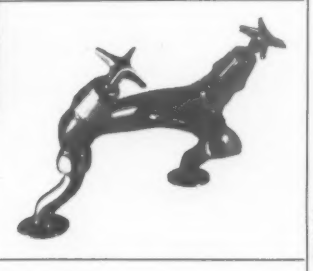

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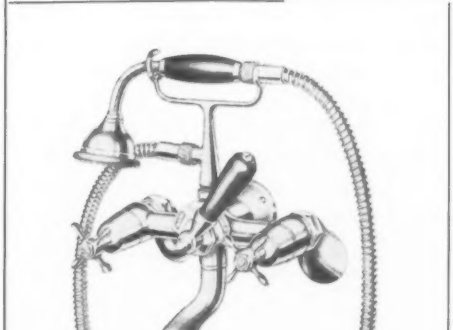

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combination taps, showers and mixers

Combination taps are clearly an advantage in sinks and baths, but it should be noted that few water authorities will approve mixer valves where the mixing takes place in the body of the tap, if the cold supply is direct from the mains. Where this occurs there must be separate waterways within the tap, mixing taking place at the nozzle. This eliminates fluctuations of temperature due to unequal pressures.

14, a mixer tap incorporating a patent device which allows a good mix on equal or unequal pressures. No. 517 Prestex by Peglers. No separate waterways.

15, combination tap with swivel nozzle. A 9244, Shanks. No separate waterways.

16, combination tap with inclined heads and swivel nozzle. No. BS 825 'Seco' by Sanbra. No separate waterways.

17, combination tap with inclined heads and no undercuts. 'Biflo' by Barking Brassware. Separate waterways.

18, combination tap with valves screwing horizontally. 'Twinseal' by Byrom. Separate waterways.

19, a bath combination fitting by Samuel Booth, supplied with china or metal discs or plastic 'Clenex' heads; available with adjustable centres. Separate waterways.

20, a bath combination fitting with the upper body casting and head combined. 'Easilyne' No. 5310 by Sanbra; suitable for fixing to pillar or bibcock holes. No separate waterways.

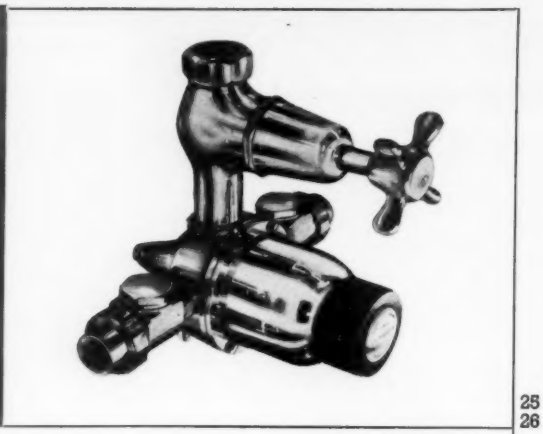
21, a similar combination fitting with the advantage of no undercuts. 'Slipstream' by M. Cockburn. Separate waterways.

22, a combination fitting with adjustable centres. 'Biflo' No. 3601 by Barking Brassware. Separate waterways.

23, a combination fitting with hand shower for wall fixing. No. 700, ¾ inch, by Aston Brass. Available in pillar and bib types.

24, a similar fitting by the same firm but of the pillar type, with adjustable centres, and overhead shower. No. 800.

25, a new fitting which incorporates notable improvements. The shower is held at right angles to the end of the bath, in one of two wall sockets. The upper socket (not shown) gives a shower in the standing position; the lower position allows the drips from the rose of the shower to fall



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wastes, overflows and bottle traps

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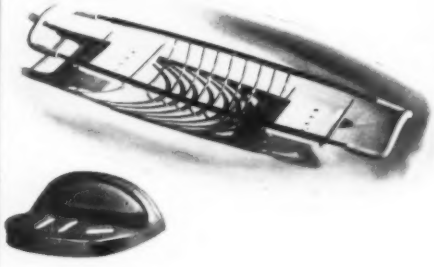
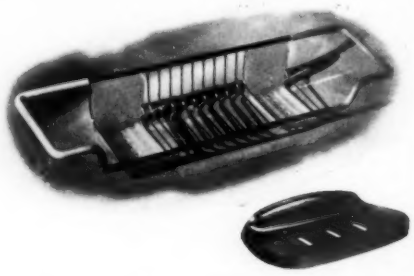
accessories





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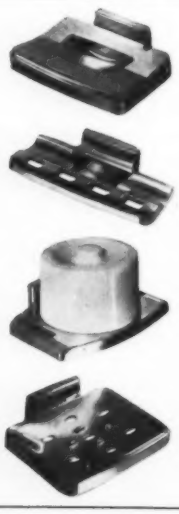

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straight into the bath instead of running down the whole fitting as in the cradle type of holder. Centres are adjustable. 'High-low,' by Barking Brassware.

There are no combination taps with hand showers and separate waterways.

26, a new thermostatic mixing valve for maintaining a fixed temperature. The model illustrated is designed for small groups of showers or basins, or a single bath. It can be used where there are unequal or fluctuating hot and cold water pressures, but the difference in pressure must not be greater than 5 : 1. Leonard 3, made by Walker & Crosweller, one of a wide range to suit many purposes, including valves for steam and water.

wastes, overflows and bottle traps

27, an improved design of waste fitting preventing stain and corrosion resulting from dirty water remaining on the flange, as sometimes occurs where the flange is flat. No. 827 'Goblet' by Barking Brassware, available in 1¼ inch or 1½ inch sizes.

28, an overflow, more pleasing than most. No. 880, 1¼ inch by the same firm.

29, a 1¼ inch bottle trap with 1½ inch seal. No. 811, by Barking Brassware. Also available, No. 810, 3¼ inch seal.

30, 1¼ inch bottle traps with 3 inch seal, showing a neater cap. By Econa; available with a wide variety of outlet types. **31** shows a section through the trap. The dip pipe is beaded to avoid debris catching on a thin rough edge as the water changes direction.

accessories

32-35, examples from the range of accessories made by Valbania. The bath baskets are normally of chromium plated brass with removable plastic soap dishes. The cast units are of zinc base alloy, chromium plated.

36-39, ash tray, toothbrush rack, denture bath holder and soap tray, of zinc based alloy die castings, copper nickel and chromium plated, from the 'Masque' range by W. C. Youngman.

40, a gas heated towel rail in chromium plated brass tube. Heat is carried by water in the tubes, which requires occasional topping up. 3 feet high and 3 feet or 2 feet 6 inches wide. 'Millitherm' by Radiant Heating.

41, an electric oil-filled towel rail, 3 feet high, 2 feet 6 inches long, 'Hurseal-Leda' by Hurseal.

Manufacturers—Peglers, Prestex House, Marshalsea Road, S.E.1. Hop 2461. Barber Wilson & Co., Crawley Road, Wood Green, N. 22. Bowes Park 3461. Samuel Booth & Co., Cheapside Works, Cheapside, Birmingham, 12. Victoria 2717. Sanbra, Sanbra Works, Aston Hall Road, Birmingham, 6. East 1231. (*London office*—16, Berkeley Street, W.1. Mayfair 0231). Shanks & Co., Tubal Works, Barrhead, near Glasgow. Barrhead 1061. Byrom Manufacturers, Trafford Park, Manchester, 17. F. H. Bourner & Co. (Engineers), Manor Royal, Crawley, Sussex. Crawley 1312. Aston Brass Co., Bromford, Erdington, Birmingham. Econa Modern Products, Aqua Works, Highlands Road, Shirley, Birmingham. Solihull 3078. Valbania, Cavendish Works, Hartington Road, S.W.8. W. C. Youngman, Manor Royal, Crawley, Sussex. Crawley 1234. Radiant Heating, Radiant Works, 9, Barnsbury Park, N.1. Barking Brassware Co., River Road, Barking, Essex. Rip. 3057. M. Cockburn & Co., Gowanbank Iron Works, Falkirk, Stirlingshire. Falkirk 445. (*London office*—28, Brook Street, W.1. Grosvenor 8941-9). Walker, Crosweller & Co., Cheltenham, Glos.

[continued on page 421

POST-TENSIONING

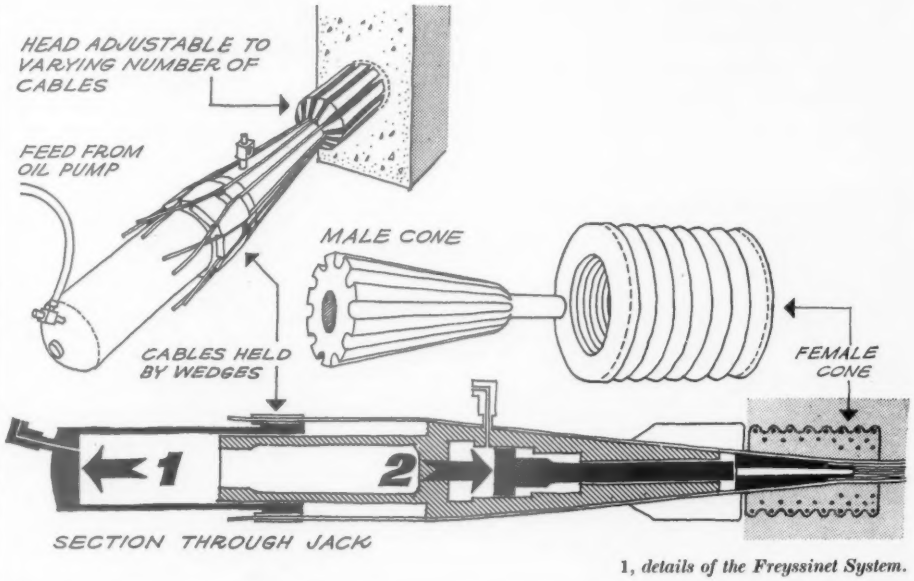
by H. Heller and F. N. Newby

Pre-stressing is an old structural principle which has come to the fore during the past decade, and has acquired a new meaning through its application to concrete. Nevertheless it is worth noting that it can be applied to other materials, to timber, brickwork and steel for example.

Post-tensioning may be defined as the stressing of members after they have been manufactured, as distinct from pre-tensioning in which the member is cast around the already tensioned cable. Clearly, each method has its appropriate field of application, and since development is now so prolific, we here confine attention to post-tensioning only, and to its application in building rather than engineering structures.

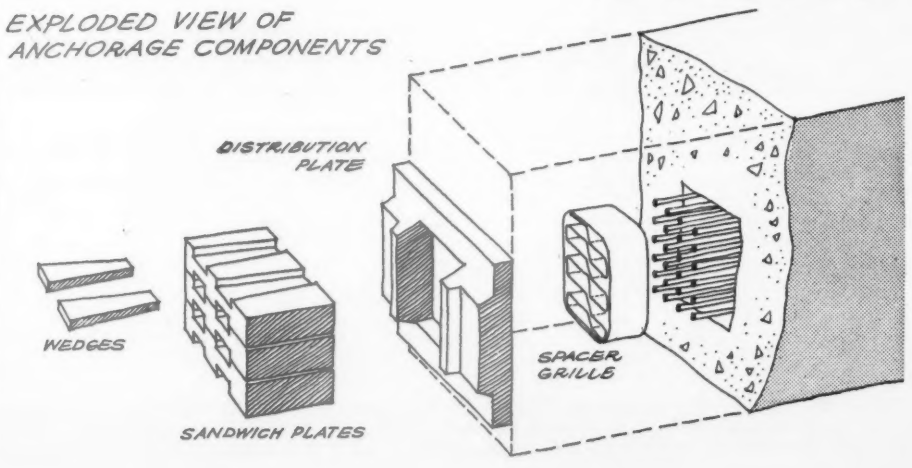
By altering the structural characteristics of materials, pre-stressing necessarily alters their outward appearance in use, hence demanding of the architect different notions of structural feasibility and proportion. At the same time, the fining down of members, and the exigencies of stressing and assembly have brought a new kind of experience in site operations and practice. Concrete members are jointed in a manner often reminiscent of carpentry; and consideration of *how* the separate parts are to be assembled and stressed must combine equally with stress analysis in the determining of their ultimate arrangement. If site management and the processes of building are more and more occupying the attention of the good architect, this former aspect may be more significant to the architect reader than the calculations.

The object of this article is less to discuss fundamental principles, which are mostly already familiar, than to record development that has so far taken place.



1, *details of the Freyssinet System.*

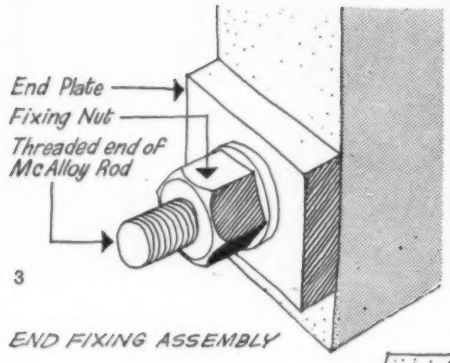
2, *details of the Magnel-Blaton System.*



methods

The idea of inducing an initial compression in the member—to be partly or wholly cancelled by the imposed loads—is, as we have said, an old one. Claims to have been the first to think of it are numerous and conflicting. As far back as 1896 a Norwegian named Lund suggested that mortar-jointed blocks for floor con-

3, details of the Lee-McCall System. 4, a hand-operated Lee-McCall jack being used to tension the column bars in the portal frame shown in 5.



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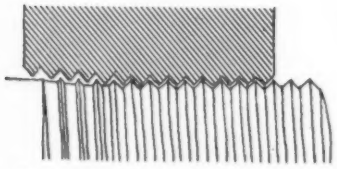
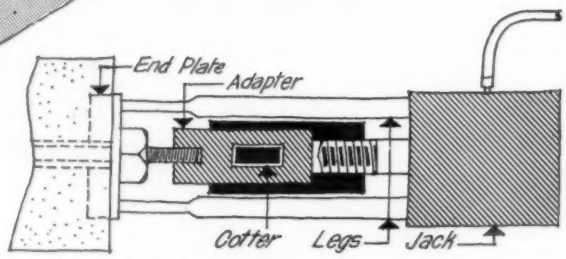
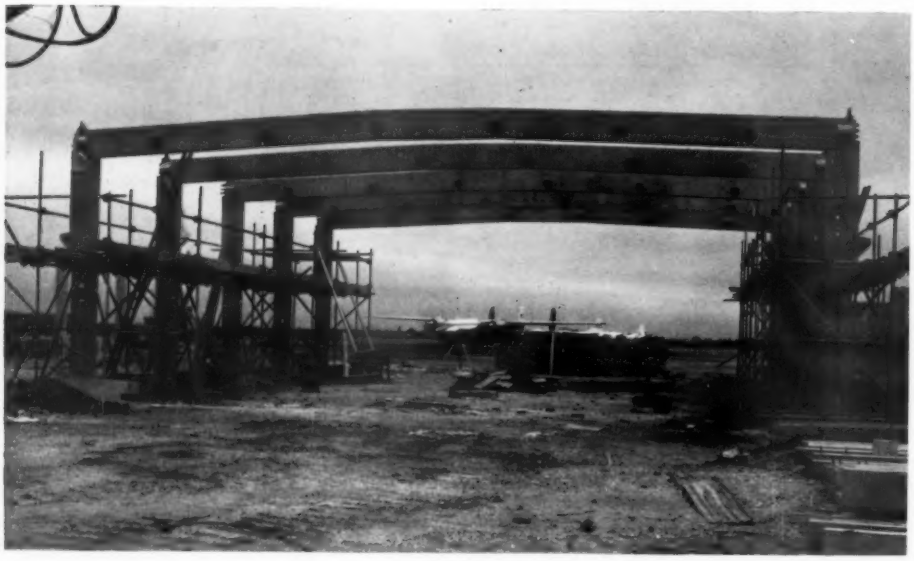
END FIXING ASSEMBLY



SPECIAL THREAD AT JACKING END



DIAGRAMATIC PLAN OF JACKING GEAR



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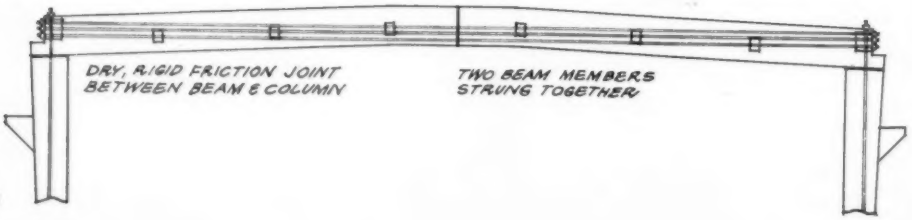

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5, 6, portal frames in the Staff Catering Block at London Airport. The beam members are pre-cast in two sections, are assembled and post-tensioned on the ground, and are then lifted on to the columns. Rigid joints at the abutments are then produced by a vertical Lee-McCall bar which stresses the beam and column together.

struction could be pre-stressed. The main difficulties were lack of a high grade concrete, and of a pre-stressing element capable of taking the high stress. Only with the advent of Portland cement and steel alloys of high yield point did the idea become a feasible proposition. The other difficulty was that since small diameter wires were more appropriate for the tensions required, there had usually to be a large number of them in a member, and thus a jack was needed which would pull several simultaneously. This implied also the need for a device to anchor several wires at the same time. Hence it is that development of post-tensioned concrete has very largely depended on the evolution of simple and adequate equipment of this kind. The three systems here discussed are those of Freyssinet, Magnel and Lee-McCall.

The Freyssinet consists of a ring of 0.2 inch or 0.276 inch diameter wires of ultimate strength 100-120 tsi arranged round a central wire core. The core and wires are either threaded through a preformed hole in the concrete or cast in (with a sheath to prevent bond). The ring of wires pass out of the concrete member between a male and a female cone, and are attached to the outer casing of the jack. This latter moves outwards to pull the wires taut, and then an inner piston at the concrete end of the jack jams the male cone tight in to anchor the wires permanently, 1. The number of wires in the ring can be varied—8, 10, or 12, according to the stress required. The larger number calls for an end block about 6 inches square, and thus it happens occasionally that an otherwise slender member has to be thickened at its ends.

The Magnel-Blaton system is similar to the Freyssinet except that the wires are in horizontal groups of four totalling up to 72 in number for the whole pre-stressing element, which is rectangular in section. The wires pass out of the member through sandwich plates which have dovetail wedges driven tight with a hammer to grip two wires at a time, the stressing being done in pairs. While the p.s. element is perhaps more bulky than with the Freyssinet system, it allows for more wires and possibly a greater equality of stress in the wires, 2.

The Lee-McCall method is rather different from the other two, for it uses bars of $\frac{1}{2}$ inch to $1\frac{1}{2}$ inches diameter instead of wires, and a correspondingly lower ultimate stress of 72 tsi. The metal is

[continued on page 423

McAlloy steel available in lengths of up to 70 ft. The notable feature here is the simplicity of the anchoring, for the protruding end of the bar is threaded, and has a nut and washer which, after tensioning by a hand-operated jack, are tightened against the bearing plate on the end of the member. This anchorage would not be possible with the small diameter wires. The lower initial compression in the concrete compared with the other two systems means a bulkier concrete member and thus perhaps higher cost, but this is offset by the simplicity and cheapness of the end anchorage. It is one of those cases which seem characteristic of building technique, where exigencies of the site and the workshop modify what is theoretically desirable, 3 and 4.

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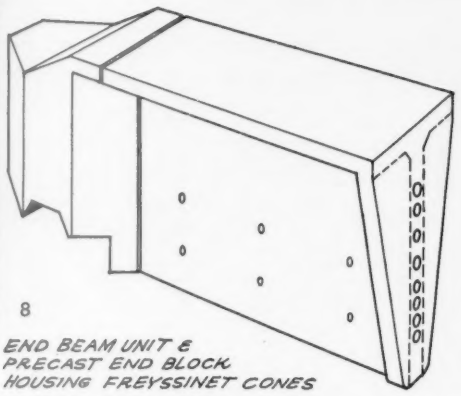

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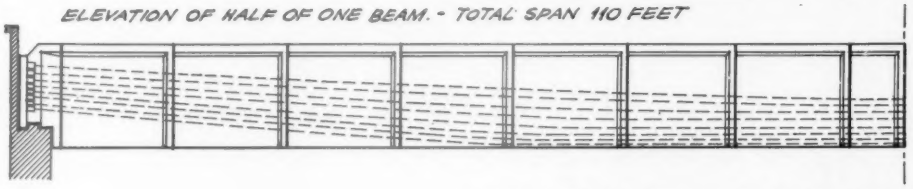


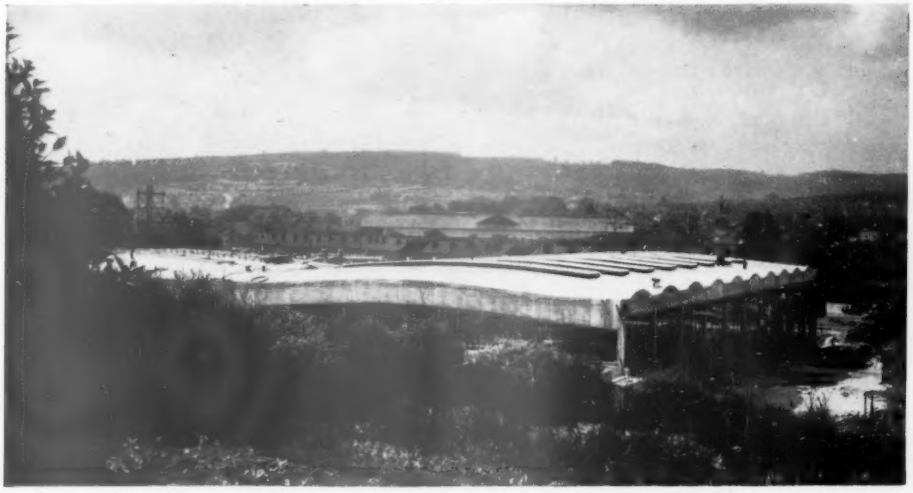
7 and 8, detail of the hangar roof at ***London Airport.***

practice

It is obvious that very few components in building are uniformly stressed. In conveying the imposed and dead loads to the foundation the stress in each member, be it beam, column, slab or cantilever, will vary from point to point. Hence arose the idea of varying the shape of members appropriate to their stress distribution, most notably in normal reinforced concrete work. It is an idea which commends itself to both engineer and architect for basically the same reason. It 'expresses the function' as we say, or used to say.

In pre-stressed concrete the idea has come to be presented in a slightly different guise. In beams, the p.s. element may be concentrated in the lower portion, so that the beam cambers upwards when tensioned, in some cases to flatten out when loaded, in others to retain a visible 'bowing,' 5 and 6. With some kinds of floor slab the camber will imply a variation in screed thickness between centre and ends. If the p.s. beams carry secondary beams there will need to be some kind of 'tolerance' adjustment where secondaries meet the primary—an expedient not so easy to achieve perhaps in concrete work. Nor can equality of camber between otherwise identical units be guaranteed always.

Two other ways in which the pre-stressing element can be arranged to follow the line of principle stress are to either curve the profile of the beam so that the cable remains straight and is near the top at the bearings; or to curve the cable itself, the profile remaining straight, 7, 8. Perhaps the most dramatic exposition of the former are



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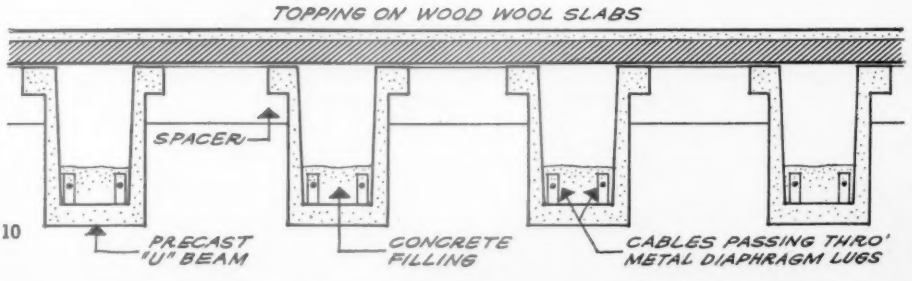

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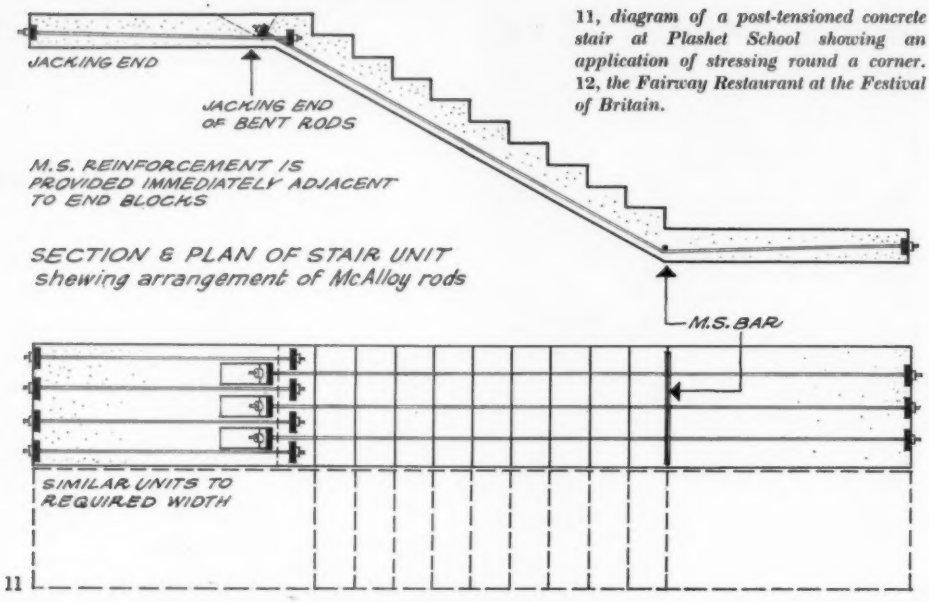
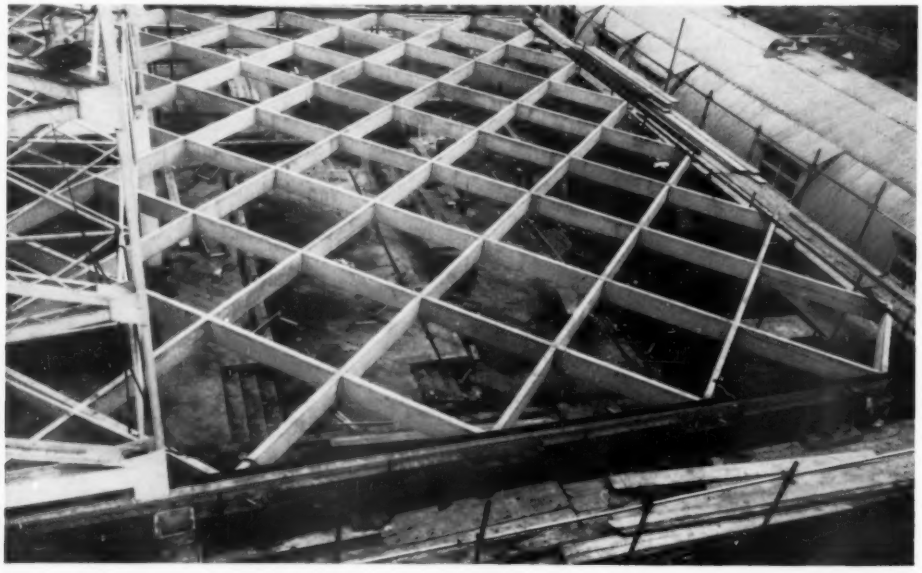
9, bus garage at Sheffield, a stressed concrete shell with straight Magnel cables passing through the curved valleys. 10, diagram showing the cross section through a long span roof construction made up of short precast concrete units where the post-tensioning cables pass outside the concrete members.


JACKING END
JACKING END OF BENT RODS
M.S. REINFORCEMENT IS PROVIDED IMMEDIATELY ADJACENT TO END BLOCKS
SECTION & PLAN OF STAIR UNIT shewing arrangement of McAlloy rods
M.S. BAR
SIMILAR UNITS TO REQUIRED WIDTH

11

11, diagram of a post-tensioned concrete stair at Plashet School showing an application of stressing round a corner. 12, the Fairway Restaurant at the Festival of Britain.



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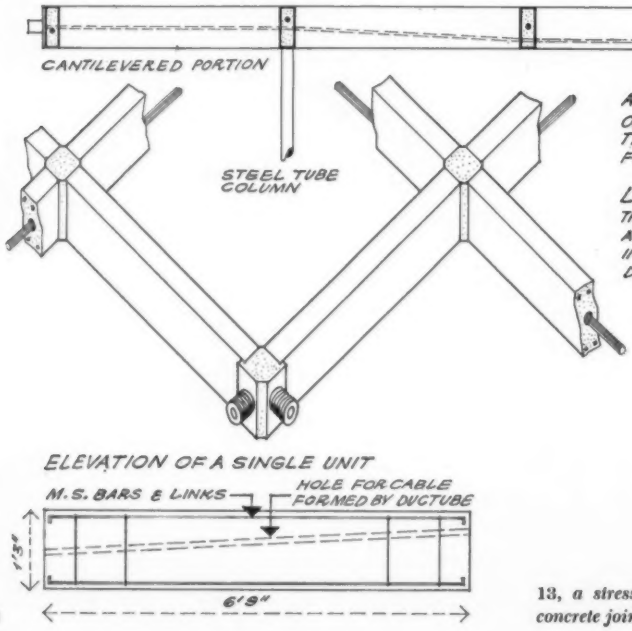
CANTILEVERED PORTION
STEEL TUBE COLUMN
Above PART ELEVATION OF ONE BEAM, SHEWING THE LOOPING OF THE SINGLE FREYSSINET CABLE
Left DETAIL SHEWING THE IN SITU CONCRETE JOINTS AT THE EDGE AND AT THE INTERSECTIONS OF THE DIAGRID
ELEVATION OF A SINGLE UNIT
M.S. BARS & LINKS
HOLE FOR CABLE FORMED BY DUCTUBE
1'3"
6'9"

13

13, a stressed concrete diagrid with in situ concrete joints cast between short precast units.

the multiple shell roofs in which both edge beam and shell swell upwards from bearing to bearing, 9. While this method in general carries the complication of 'irregular' shuttering, it seems more appropriate to quantity production from a single mould.

Against this, curving of the cable presents the problem of leaving a curved hole in the concrete—usually achieved by wiring the pneumatic tube core to stirrups of sufficient sturdiness to withstand concrete pouring.

Thirdly, it is possible to arrange the p.s. element outside the concrete altogether. This is often done with hollow sections of trough shape which have intermediate diaphragms to deal with buckling tendencies, holed to locate the cables, 10. An interesting example of 'bent' prestressing, which is a beam of another kind, is the staircase illustrated in 11. Here the cable follows the cranked shape, and as the tension in the steel and the compression in the concrete are always equal, the two components form a balanced system, and no buckling or movement can occur. The answer then to the architects' query—can one stress round a corner?—is yes, but the engineer adds a warning—that the sharper the corner the less efficient the stressing, for there are friction losses.

There is another way in which the 'expression of function' idea is significant. In normal reinforced concrete work the choice is, broadly, between high quality pre-cast concrete units with the implied difficulty of making 'stiff' joints; and in situ r.c., of less reliable quality, in which the 'stiff' joint is, of course, the essential part. The effort to attain stress continuity by making the components larger, brings on handling and hoisting difficulties.

By post-tensioning, however, a number of workshop made units small enough to be comfortably handled can be strung together and stressed to form a single monolithic member, and the units can be shaped according to the stress distribution. Forces are transmitted through dry joints by friction, and there is no need for mechanical connections, 12. In this way pre-stressing brings together two desirable characteristics which previously were mutually exclusive—workshop quality concrete and continuity of stress.

This leads naturally to the idea of making continuous beams of pre-cast units, either by curving the cable upwards over the supports, or by curving the beam. In the former case there is the difficulty of friction loss, which, in beams of many

[continued on page 425

spans may mean a serious loss of pre-stress in the centre spans. The friction difficulty has been tackled by stressing from both ends of the cable, but this means more stressing and anchoring operations on site, 13, 14, 15, 16. The value of continuous beams is partly in the reduced moments in centre spans—meaning smaller size of member, and partly in the greater simplicity of joints over internal columns. One other solution to the problem of continuity is to provide short lengths of cable over the supports between contraflexure points, which bend up and emerge in the top of the beam for stressing and anchoring.

Rigid 'portal' frames are another case where continuity can be achieved. In the two halves of a three pin frame, each half has two cables which cross each other at the knee emerging from the concrete obliquely at the anchorage, 17.

Continuity in columns seems to have received less attention, though it is no less desirable. The only example in this country (so far as is known) is in a Glover Tower designed for the S.E. Gas Board, 18. Here the columns have cables throughout their length, the number of wires diminishing at each storey towards the top. The structure is also stressed horizontally through the beams.

conclusion

A comparison of post-tensioned concrete with ordinary reinforced concrete is instructive, but by no means straightforward. The high tensile steel is more expensive than mild steel, but when translated into ton of force carried it is the more economical material. Likewise the concrete used for p.s. work is of a higher quality—it has a higher crushing strength and may thus be more expensive to make, but less of it is used to perform a comparable task.

One of the most significant determinants of cost in p.s. work is the number of end anchorages, for these are a substantial proportion of the total cost. This and the fact that post-tensioning is more effective in structures where dead load is a large part of the total load, makes it uneconomical in general to post-tension short span systems. Future simplification of anchor devices may well alter this situation.

A comparison of depth-span ratios gives some indication of the saving in volume, and thus dead weight of material. In ordinary r.c. beams and slabs it is about 1 : 12 and 1 : 24 respectively. In prestressing these become about 1 : 20 and

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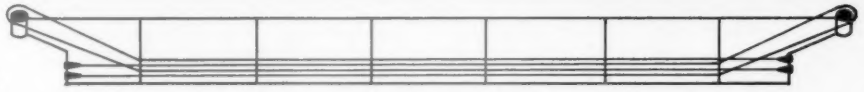

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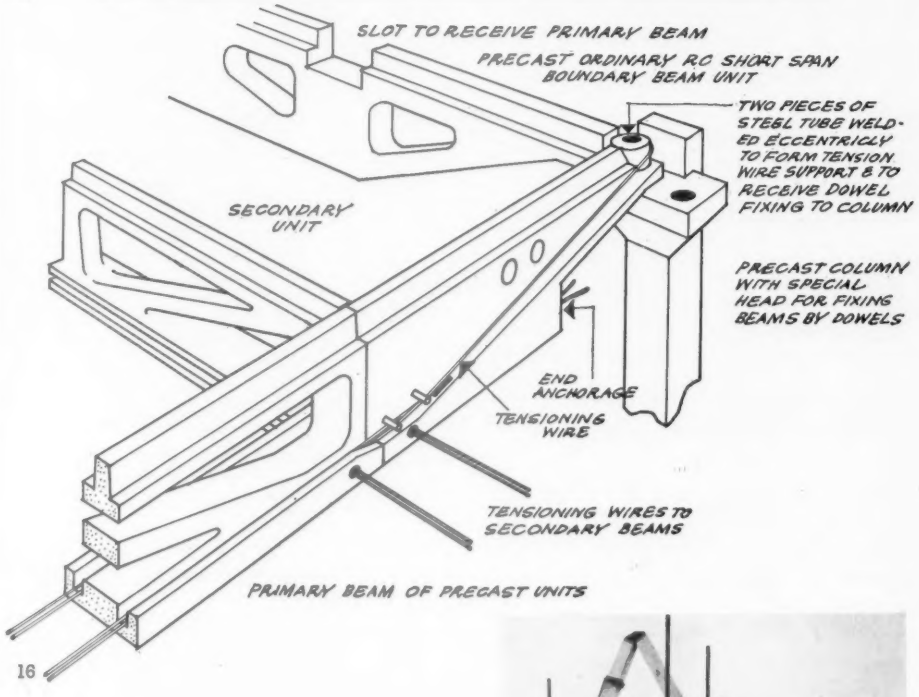
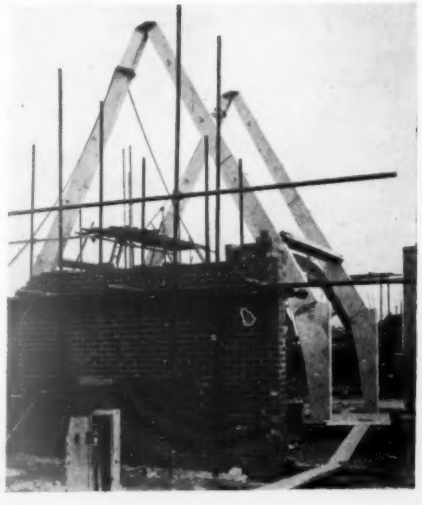

SLOT TO RECEIVE PRIMARY BEAM
PRECAST ORDINARY RC SHORT SPAN BOUNDARY BEAM UNIT
TWO PIECES OF STEEL TUBE WELDED ECCENTRICLY TO FORM TENSION WIRE SUPPORT & TO RECEIVE DOWEL FIXING TO COLUMN
SECONDARY UNIT
PRECAST COLUMN WITH SPECIAL HEAD FOR FIXING BEAMS BY DOWELS
END ANCHORAGE
TENSIONING WIRE
TENSIONING WIRES TO SECONDARY BEAMS
PRIMARY BEAM OF PRECAST UNITS

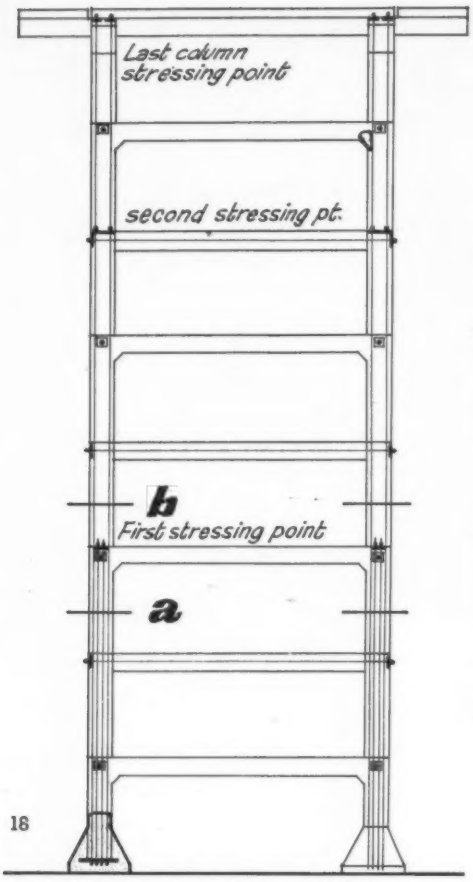
16

14, 15, 16, Worthing secondary technical school. Primary beams are post-tensioned on the ground and are then lifted into position. The secondary units are then placed between the beams, wires are run through beams and units together so that when tensioned they form a continuous beam at right angles to the primaries.

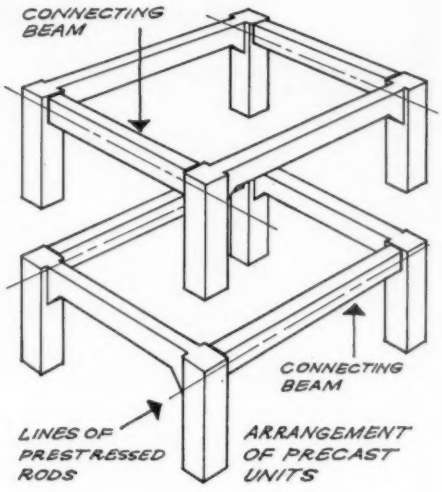


17

17, church at Lockleaze, Bristol, illustrating a three-pinned arch in which rigidity at the knee has been achieved by stressing both in the line of the rafters and in the line of the abutments.



18, *a Glover Tower erected for the South Eastern Gas Board. This structure is the first example in this country of a multi-storey post-tensioned rigid frame.*



PLANS OF COLUMN AT *a* & *b*

1 : 30 or 40. In multi-storey structures this could bring noticeable savings in total height and in foundation loads. One other characteristic of pre-stressing is the water tightness of the compressed concrete, which means that members exposed to the weather are safe from corrosion of the steel inside.

It is worth recalling, as a sobering fact, that the spectacular progress of pre- and post-tensioning in this country since the war is very largely due to the shortage of steel—a case analogous to that of fireplace design and the coal shortage. The engineering knowledge has been there in both cases for several decades. Among the causes of delay, the high cost of pioneer experimental work must surely bulk large, for the feasibility of any technical idea as a practical proposition for the consumer must depend upon the building up of a body of experienced craftsmen in the industry. Cost depends upon the number of man-hours, and the number of man-hours depends upon organization—each man knowing what his part in the team is, and knowing that the team is efficiently deployed. Thus the success of a method is very greatly a site and workshop matter, in which, as we have said, the good architect is more than ever concerned.

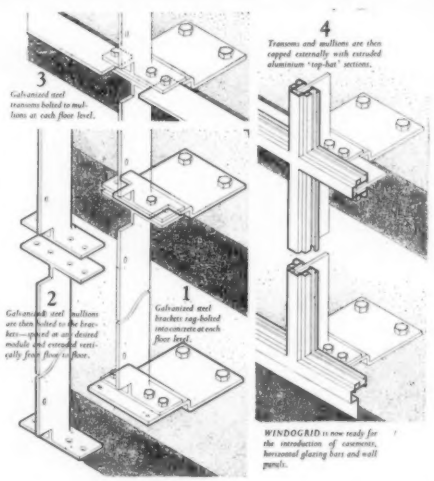
WINDOWS

WINDOW WALLS

The window wall and the sub-frame are a constituent part of our architecture and any new system of providing them commands attention. Messrs. Henry Hope and Sons have produced a new catalogue which both introduces their new 'Windogrid' system of fenestration and recapitulates the important part this firm has played in the development of the window wall as a constructional idea.

The 'Windogrid' is a system which comprises a grid of galvanized steel mullions and transoms of flat section which are bolted through brackets to the structural floor. This grid is then covered externally by extruded aluminium frames of top hat section to hold the glass or metal facing panels, while steel angles bolted to the underside of the grid members hold the insulating panels behind.

This system was first devised for the LCC's Parliament Hill school (architect Dr. J. L. Martin) and thus affords yet one more example of a group of manufactured products which, having been designed with a particular job in view, have then been made generally available. It is a very flexible system capable of serving any reasonable module (or for that matter, no module at all) and of receiving a wide variety of internal and external panel components. It is interesting to compare it (as this catalogue permits us to do) with other window walls manufactured by Messrs. Hope during the last twenty years. With, for instance, those of the Coventry College of Art and Technology (architect D. E. E. Gibson) where the visible sections are all in *pressed* metal, or with the façade of Peter Jones (architects Slater and Moberley, associated architects Reilly and Crabtree) where the steel mullions were covered with extruded bronze facings.


3
Galvanized steel transoms bolted to mullions at each floor level.
4
Transoms and mullions are then capped externally with extruded aluminium "top-hat" sections.
2
1
Galvanized steel brackets rag-bolted into concrete at each floor level.
WINDOGRID is now ready for the introduction of casements, horizontal glazing bars and wall panels.

1, *diagram showing the elements of the 'Windogrid' system.*

This publication, though brief, represents a form of publicity which is all the more welcome because so large a part of the history of building technique is tucked away in the archives of our leading manufacturers and waits on them to see the light of day.

SPIRAL BALANCES

Many architect readers will be already familiar with the 'Unique' spiral balance, since this product has now been on the market for some years. We are taking this opportunity of calling attention to it here since experience has shown that it is a gadget which in the long run is capable of

[continued on page 428

The thunder of feet, the pounding of a floor covering under the impact of boisterous activity of youth calls for the qualities inherent in linoleum: resistance to abrasive wear, easy to clean and keep clean, noise absorbing for quietness of tread, and to the ever-lasting satisfaction of rate-payers, linoleum, once it is well laid, is an infrequent item in the budget of the expenditure of local authorities. Linoleum of the right grade will still be in use in a school when the scurrying of Smith Minor's feet becomes the dignified pace of Smith Major when he returns to the scene of his youthful exuberance.

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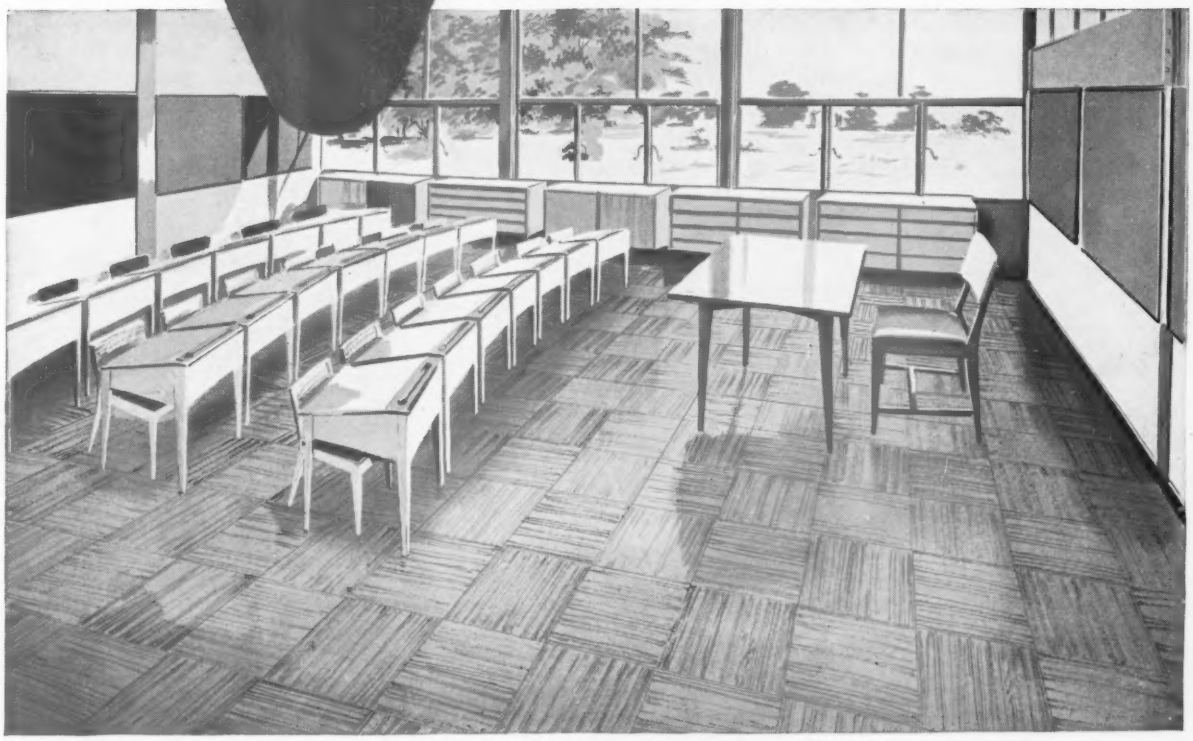

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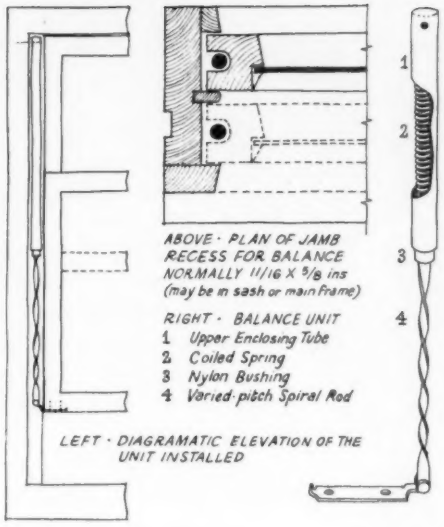
continued from page 426]

effecting a lasting change on window design.

However romantic the association of the casement, there is no doubt that only the sash can give controlled ventilation. Yet the sash seemed to be dogged by the inescapable nuisance of the weights: with the sash cords that break, the pulleys that jam and the capacious boxes with their attendant workmanship and material. On all counts, therefore, it was clear that a contrivance that suited very well with the particular genius of the eighteenth century had become a gross anachronism in the twentieth.

The 'Unique' Balance disposes of all the functional disadvantages of the weighted sash and at the same time brings about such reductions in bulk and in joinery work that the sash is restored as an economic solution. The idea behind it is very simple. The bottom of the sash is attached to an accelerated spiral rod which in turn is attached by a rotating bush to a torsion spring. It is the spring, of course, which balances the sash and which is chosen and adjusted to serve this purpose, the object of the accelerated spiral being merely to ensure that the spring exerts an even pressure on the sash throughout its run.


1
2
3
4
ABOVE · PLAN OF JAMB RECESS FOR BALANCE NORMALLY 11/16 X 5/8 ins (may be in sash or main frame)
RIGHT · BALANCE UNIT
1 Upper Enclosing Tube
2 Coiled Spring
3 Nylon Bushing
4 Varied-pitch Spiral Rod
LEFT · DIAGRAMATIC ELEVATION OF THE UNIT INSTALLED

2 *the 'Unique' spiral balance.*

This slight but effective mechanism is concealed in a tube of half an inch diameter which is then housed in a groove cut either in the sash or in the frame. It will be seen from the drawing that the weight box has been eliminated altogether and that the frame of the sash is little heavier than that required for the casement type. The cost of the balances is 16s. per set of four for a window weighing not more than 30 lb., 64s. per set where the window weighs over 30 lb.

EQUIPMENT

THE PATERNOSTER LIFT

The lift is an element which has attracted less architectural thought than it deserves. As with so many other relatively elaborate pieces of equipment, the architect has been content to embellish where he can and where he cannot, to conceal. For this reason any variation from the usual which is basic enough to compel him at least to face the real technical and functional problems is to be gratefully accepted.

The 'Paternoster' lift is not a new thing in itself. Indeed, J. & E. Hall, who are now marketing a version in England, were making them as far back as the eighteen-sixties. Being a continuous lift in which two cars move up and down on unending chains, it has no doors and maintains a steady speed of the order of 60 to 75 feet per minute. The service which it gives is clearly of a very different sort to that of the hand operated lifts,

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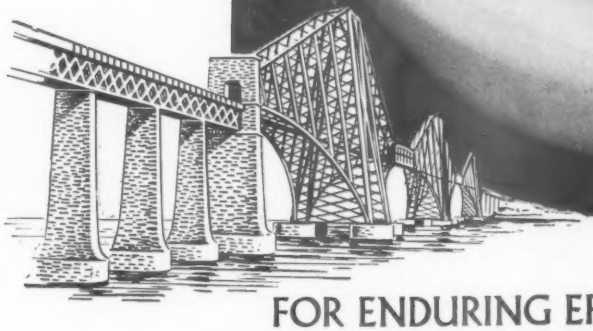

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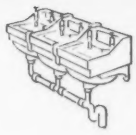

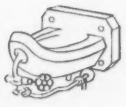

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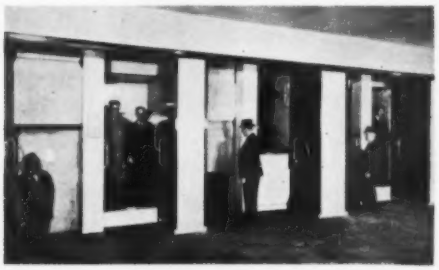
being in respect of movement more closely allied to the escalator. It cannot advantageously serve a very tall building—seven storeys is considered to be the limit—and it is perhaps less effective than an orthodox lift service in coping with a very large rush of people at the beginning of the working day. But there is a certain type of commercial building in which there is much inter-floor movement at all times where it can meet the need exactly.



3, *Paternoster Lift installed in Newcastle.*

To English people who expect to have to wrestle with a double set of doors before they can venture into the car, the concept of the open shaft is slightly alarming, but in the continent of Europe, where there is an unbroken tradition of Paternosters, they have a record of safety which compares well with lifts of the other kind.

BUS TERMINUS AND OFFICES IN DUBLIN

James Latimer, Patricia Almond, Joan Prendergast, Robert McKeever and Liam Boyle should have been added to the list of assistant architects which appeared on p. 256 of the April issue and the following consultants and suppliers should have appeared on p. 290: Heating, ventilating, and plumbing: Messrs. Varming & Mulcahy; Electrical installations, suction, and ejector pumps: Nicholas Mathews; Messrs. Troughton & Young, and Merchant Adventurers supplied some of the light fittings.

CONTRACTORS etc

School at Hounslow. *Architect:* Denis Clarke Hall, in association with Mr. C. G. Stillman, County Architect for Middlesex. *General contractors:* J. Lawson & Co. *Sub-contractors: structural steelwork:* Sanders & Forster Ltd. *Tubular spaceframes, balustrading and railings:* Scaffolding (Great Britain) Ltd. *Roofing:* William Briggs & Sons. *Windows, patent glazing:* Williams & Williams Ltd. *Heating and hot water:* Comyn Ching & Co. (London). *Electrical:* William Steward & Co. *Semastic flooring:* Semtex Ltd. *Coloured concrete tiles:* Hall & Co. *Terrazzo:* Mosaic & Terrazzo Co. *Hardwood floors:* Hollis Bros. *Metal lath suspended ceiling:* Bracketing, Centering & Lathing Ltd. *Sanitary fittings:* B. Finch & Co. *Ironmongery:* A. J. Binns Ltd. *Entrance doors to Assembly Hall:* D. Burkle & Son. *Library and cloakroom fittings:* R. Cattle Ltd. *Dome lights:* T. & W. Ide Ltd. *Acoustic tiling:* May Acoustics Ltd. *Chainlink fencing:* Fencing (Shepperton) Ltd.

School at Ruistip. *Architects:* Yorke, Rosenberg & Mardall, in association with Mr. C. G. Stillman, County Architect for Middlesex. *General contractors: foundations:* Tersons Ltd. *Superstructure:* Prestige & Co. *Sub-contractors and suppliers: stock bricks:* The Cement Marketing Co. *Uxbridge flint bricks:* Uxbridge Flint Brick Co. *Hornton stone:* London & Sussex Merchants Ltd. *Structural steel:* Hills (West Bromwich) Ltd. *Terrazzo:* Arcanum Terrazzo & Stone Co. *Wall tiles:* Carter & Co. *Wood flooring:* Hollis Bros. *Wood windows:* The Tomo Trading Co. *Flush doors:* Linden Doors Ltd. *Metal windows:* Williams & Williams Ltd. *Ironmongery:* Lockerbie & Wilkinson (Birmingham) Ltd. *Heating:* Norris Warming Co. *Electrical:* T. Clarke & Co. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Cloakroom fittings, railings, cycle shelter, etc.:* Clark Hunt & Co. *Gates and fencing:* Light Steelwork (1925) Ltd. *Chimney and tank:* Chimneys Ltd. *Suspended ceilings:* Anderson Construction Co. *Roofing:* William Briggs & Sons. *Curtain tracks:* Tidmarsh & Sons. *Paint: glossy:* Imperial Chemical Inds.; *flat:* Screetons, Paintmakers, Ltd. *Asphalt tile flooring:* Korkoid Decorative Floors Ltd. *Cement tile flooring and cills:* Parkinsons (Wall Tiling) Ltd. *Joinery fittings:* Rippers Ltd. *Kit lockers:* James Gibbons Ltd. *Ash hoists:* Herbert Morris Ltd. *Playgrounds:* Tarpaving & Tarmacadam Ltd. *Plastering and screeds:* J. H. Jenner & Co. *Glazing:* Wottons (Croydon) Ltd. *Lighting fittings:* S. L. R. Electric Ltd., Falk Stadelmann & Co., Merchant Adventurers Ltd., Troughton & Young Ltd., Holophane Ltd., Benjamin Electric Ltd., General Electric Co.

Factory at Stevenage New Town. *Architects:* D. P. Reay, Chief Architect, Stevenage Develop-

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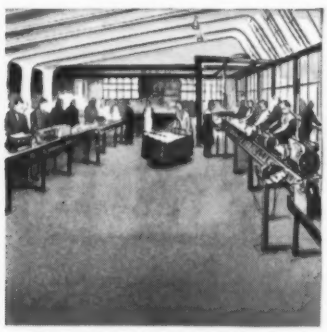
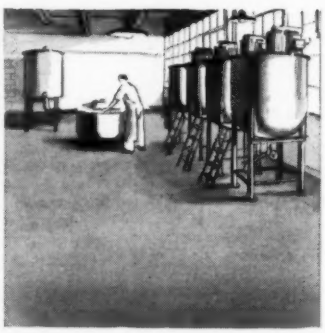
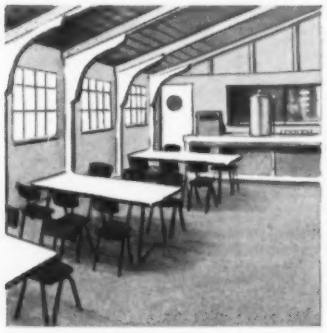
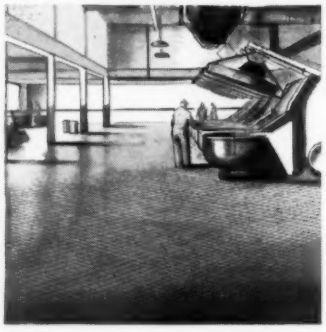




INDUSTRIAL FLOORING





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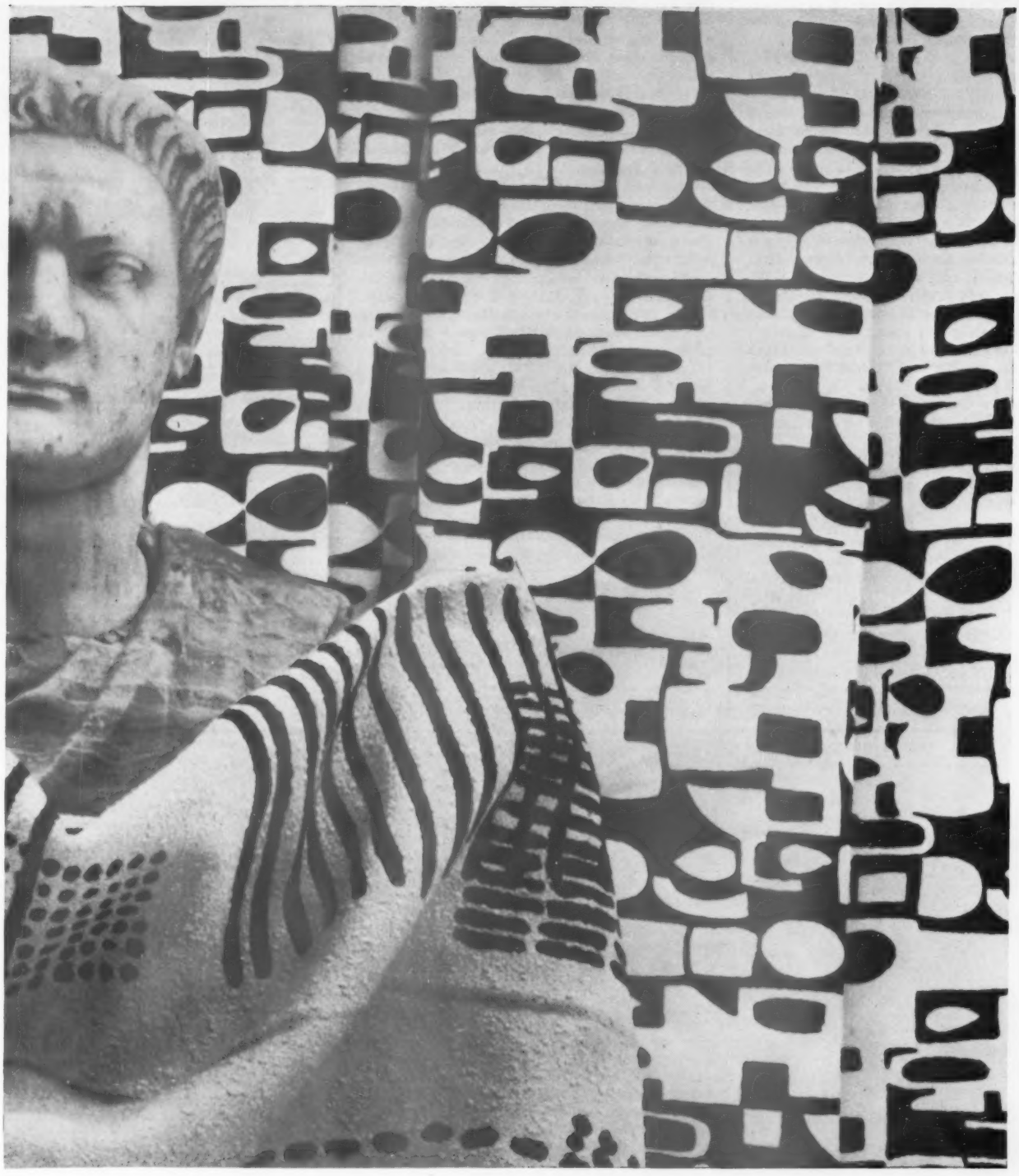

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★ *For further information, please write to D. Whitehead Ltd., Higher Mill, Rawtenstall, Lancs.*

DAVID WHITEHEAD FABRICS

continued from page 430]

ment Corporation; L. G. Vincent, Deputy Chief Architect; L. W. Aked, Group Leader; J. Gowan, Assistant Architect. *Quantity surveyors:* Gardiner & Theobald. *Consultants (concrete frame):* R. E. Eagan Ltd. *General contractors:* Gilbert-Ash Ltd. *Clerk of works:* S. A. J. Culpin. *General foreman:* S. F. Harding. *Sub-contractors: dampcourses:* Permanite Ltd. *Reinforced concrete:* R. E. Eagan Ltd. *Bricks:* Stonehenge Brick Co.; Fisons Ltd.; Erith & Co. (Flettons). *Woodwool slabs:* Thermacoust Ltd. *Plastic sheeting:* W. T. Lamb & Co. *Roofing felt:* Ragusa Asphalt Co. *Glass:* Faulkner-Greene & Co. *Patent glazing:* Williams & Williams Ltd. (Decklights); T. & W. Ide Ltd. (Domelights). *Patent flooring:* Semtex Ltd. *Central heating:* James Combe & Son. *Ventilation:* James Combe & Son. *Plumbing:* J. S. Wright & Co. *Sanitary fittings:* Stitsons Sanitary Fittings. *Door furniture:* Dryad Metal Works. *Steel casements:* Williams & Williams Ltd. *Sliding folding doors and gates:* Esavian Ltd. *Plaster:* W. A. Telling Ltd. *Metalwork:* Clark Hunt & Co. *Joinery:* P. H. Barker & Sons. *Flush doors:* F. Hills & Sons. *Painting:* J. L. Cunnington. *Paints:* Docker Bros.; Screeton Paintmaker. *Furniture (desk):* P. H. Barker & Sons. *Sign:* P. H. Barker & Sons.

Research Laboratories at Welwyn Garden City. *Architects:* E. D. Jefferiss Mathews, of J. Douglass Mathews & Partners. *Chief Assistant:* R. S. Poole. *ICI Members of Design and Building Team:* R. H. Dibb, Plastics Division, Engineering Director; J. W. Mayhew, J. Morrison, Engineering Department; T. E. Symes, Laboratories Administrator. *Quantity surveyor:* R. E. N. Lowe. *Consulting engineer:* F. J. Samuely. *Clerk of Works:* J. Gloyn, ICI Plastics Division, Engineering Department. *General contractors:* Holland & Hannen and Cubitts Ltd. (*General foreman:* W. Brown). *Sub-contractors and suppliers: designers, fabricators and erectors of steel frame:* Sommerfelds Ltd. (*Consulting engineer:* A. C. Aston). *Terrazzo paving and staircase treads:* Art Pavements and Decorations Ltd. *Pre-cast concrete floor panels, artificial stone cills, pre-cast concrete copings and marginal window frames and artificial stone mullions to main entrance:* Atlas Stone Co. *Venetian sun blinds:* J. Avery & Co. *PVC floor tile laying:* Ballastic Trading Co. *Metal balustrades and handrails, ceiling and partition fixing brackets, trade mark:* E. Coules & Son. *Acoustic ceiling tiles:* Horace W. Cullum & Co. *PVC floor tiles:* De La Rue Ltd. *Internal and external metal plywood stanchion and mullion cases, floor duct covers:* Edmonton Panel Co. *WC partitions and doors:* Flexo Plywood Industries Ltd. *Ironmongery:* James Gibbons. *Heating, ventilating, fume extraction and mechanical services:* Matthew Hall Ltd. *Internal metal window cills:* G. A. Harvey & Co. *Furniture:* S. Hille & Co. *Carda windows:* Holcon Ltd. *External wall cladding panels, demountable partitions:* Holoplast Ltd. *Vymide fabric:* ICI Leathercloths Division. *Paints, distempers and plastic emulsions:* ICI Paints Division. *Electrical installation, electric light fittings:* 'Perspex,' ICI Plastics Division. *Lift:* London Lift Co. *Ceiling panels:* Wm. Mallinson & Sons (Mfg.). *Laboratory benching, furniture:* Norbury Joinery Co. *Sanitary fittings, ironmongery:* Pryke & Palmer Ltd. *Drinking fountains:* Shanks Ltd. *Structural steel:* Sommerfelds Ltd. *Roof covering:* Standard Flat Roofing Co. *Name panels:* Stylo Plastic Engraving Co. *Electric light fittings:* Troughton & Young Ltd.

Advertisement

SUDAN GOVERNMENT

The Director of Education invites applications for the post of PRINCIPAL-DESIGNATE, Khartoum Technical Institute. The successful candidate will be required to take up his duties in the Sudan by August, 1954, at the latest.

Qualifications required are, a degree in Engineering of a recognised University or equivalent technical qualification, experience in industry and the candidate should have held a post in a Technical School or Institution at administrative level. Teaching experience is essential. Age limit 45.

In addition to the normal duties associated with the post the successful candidate will be required to assume responsibility, under the general direction of the Director of Education, for the administration and supervision of Technical Education in the Northern and Southern Sudan.

Appointment will be on Short Term Contract with bonus determinable at any time by six months' notice from either side, provided that on or after 1st April, 1955, the period of notice shall be three months and not six. Salary £E.2,500 per annum. A Cost of Living Allowance, which is reviewed quarterly, is payable. An Outfit Allowance of £E.50 is payable on appointment. Free passage on appointment, annual leave after the first tour. At present there is NO INCOME TAX in the Sudan.

Further particulars and application form will be sent on receipt of a postcard only addressed to The Sudan Agent in London, Sudan House, Cleveland Row, St. James's, London, S.W.1, quoting "PRINCIPAL 1007" and name and address in BLOCK LETTERS.

SUDAN GOVERNMENT

The Director of Education invites applications from suitably qualified candidates for the posts of Lecturers in the following Departments in the Khartoum Technical Institute :—

(*a*) Building (1010S) (*b*) Engineering (1012S)
(*c*) Commerce (1011S)

Qualifications : (*a*) and (*b*), a degree in Civil or Mechanical Engineering or a technical equivalent, e.g., A.M.I.Mech.E., A.M.I.C.E., A.R.I.B.A., etc. One of the posts in the Department of Building is available for Structural Engineers only.

Candidates should be not less than 30 years of age on appointment. Industrial experience is essential. Experience in a similar appointment would be an advantage.

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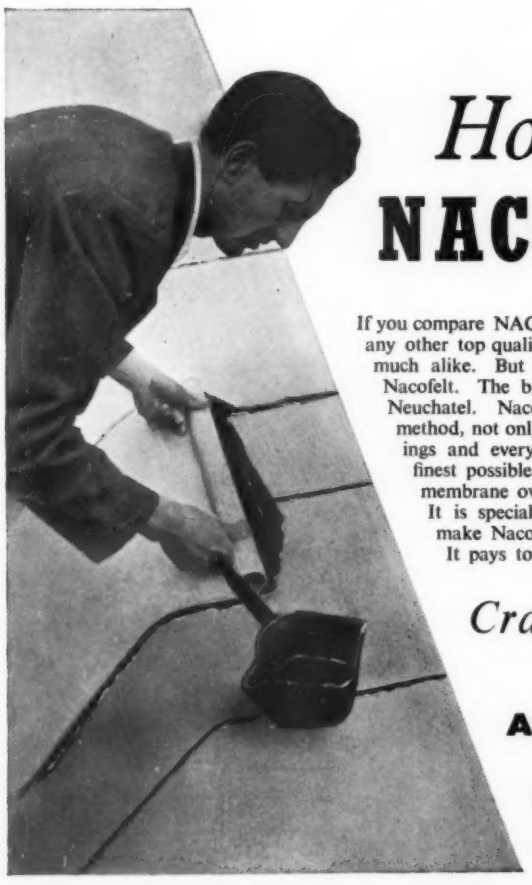

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